STATE-LEVEL COMMUNITY COLLEGE POLICY: A SYSTEMATIC REVIEW AND MULTIVARIATE INVESTIGATION

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by

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AND MULTIVARIATE INVESTIGATION

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DEDICATION

Dedicated in honor of my parents, George Jacobs, J.D. and Sharon Jacobs. Thank you for your unconditional love, for the examples you set, and for believing in me every step of this lifelong journey!

ABSTRACT

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The purpose of this journal-format dissertation was to investigate the condition of community college policy at the state-level as well as the effects of state-level policies on community college institutions and students. Three separate studies were conducted in this dissertation. Study 1 entailed a systematic literature review centered on uncovering themes within the existing research literature on state-level community college policy. The effects of political associations, demographic shifts, and economic factors on state community college appropriations were observed in Study 2. In Study 3, the effects of public investment on the outputs of Texas community colleges were examined.

These three studies have resulted in new contributions in the area of state-level community college policy. The contributions of the systematic literature review in Study 1 delineated the influence of governance, funding, and economics on community college policy at the state level through the analysis of available research literature. The determination that changes in state community college appropriations are more likely affected by economic factors than by political associations or population growth resulted from the analysis conducted in Study 2. The analyses conducted in Study 3 resulted in the conclusion that state appropriations and ad valorem property taxes affect graduation rates and persistence rates of Texas community colleges in different ways.

KEYWORDS: Community Colleges, State-Level Policy, Appropriations, Systematic Literature Review, Regression Analysis

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wonderful journey. I would also like to express my deepest gratitude to the Sam Houston State University faculty members and administrators who facilitated the coursework throughout my time in the Doctoral Program in Higher Education Leadership. Every single class meeting I attended throughout the program was informative and engaging. I could not have completed this dissertation according to the standard I had set for myself without the strong foundation of knowledge I was so fortunate to have been able to develop through the coursework in the program.

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CHAPTER I

INTRODUCTION

Community college policy at a state-level comprises a vast and complex purview with significant yet frequently counterintuitive ramifications for stakeholders (Cage, 1991; Dar, 2012; Dar & Lee, 2012; Jaschik, 1985; Salinas & Friedel, 2016; Scully, 1981). Public funding processes and regulatory environments have evolved considerably since the origins of community colleges and they continue to impact institutional operations and achieved outcomes at increasing levels (Bowen, 1977; Dar, 2012; Hearn, 2001a, 2001b; Lewis & Dundar, 2001; Mumper, 2001; Ness & Tandberg, 2013; Paulsen 2001a, 2001b; Robst, 2000; Thelin, 2011; Toutkoushian, 2001; Weerts & Ronca, 2012). As such, community colleges face continual challenges in accommodating student demand and in retaining students through completion as institutions must rely on increasing tuition to replace dwindling direct public subsidies (i.e., state appropriations and ad valorem tax revenues) as well as on indirect public subsidies (i.e., federal financial aid) to functionally operate (Cohen & Kisker, 2010; Friedel, Killacky, Miller, & Katsinas, 2012; Kennamer, Katsinas, Hardy, & Roessler, 2009; Murphy & Katsinas, 2014; Phelan, 2014; Thelin, 2011; Torraco & Hamilton, 2016; Zumeta, 2005). State-level policy and the entailed appropriations have the greatest impact of all levels of public policy on the operations, outputs, and financial viability of community colleges (Archibald & Feldman, 2006; Delaney, 2011).

History of Postsecondary Education Policy and Funding in the United States

Since the first community college system was established in Mississippi in 1908 through its rural high schools, community colleges have come to form a significant

component category of U.S. higher education. A basic understanding of the origins of the higher education construct is required to understand the origins of community colleges and the circumstances affecting them (Hutcheson, 1999). Consequently, a general understanding of public higher education policy and financing is essential to understanding the overall effects of public policy on community colleges.

Higher education is a vital public good that has been engendered, supported, and financed by the communities of the United States since before the founding of the nation (Cohen & Kisker, 2010; Dewey, 1916; Rudolph, 1962; Thelin, 2011). Cohen and Kisker (2010) argued that higher education has benefitted the public in multiple ways. These benefits include the development of the methods for the federal and state governments to expand the railroads and canals across the United States during the 19th century as well as the development of the radio, electronics, and civil aviation industries during the 20th century. In the 21st century, governmental support of higher education has led to the creation of significant industrial corporations as well as profoundly enhanced the medical, pharmaceutical, and agricultural industries (Cohen & Kisker, 2010). Colleges and universities sustained themselves through a combination of public and private financing, which included sponsorship by governmental bodies, private donors, and church organizations (Cohen & Kisker, 2010; Rudolph, 1962). Cohen and Kisker (2010) argued that higher education fared better than many other public and social institutions during the 1930s because much of the capital and facilities that the institutions needed to operate were provided during the previous decades in which funds were more available. Furthermore, Cohen and Kisker (2010) argued that the options afforded through the labor-intensive nature of higher education (i.e., the utilization of teaching assistants for

teaching functions instead of full professors) enabled many colleges and universities to survive through the Great Depression.

Following World War II, the federal government generously supported higher education institutions to accelerate the production of defense research and a capable educated workforce. By 1976, 2,169 public and private 4-year institutions had been established in the United States (Cohen & Kisker, 2010). A demand for the community college model paralleled the achievements of U.S. higher education since the 1930s although 2-year institutions have not received as much public funding as 4-year institutions (Friedel, Killacky, Miller, & Katsinas, 2014; Thelin, 2011). By 1993, the number of public 2-year public totaled 1,024, with over 500 satellite campuses across the United States (Cohen & Kisker, 2010). In 2016, there were a total of 1,108 community colleges in the United States (American Association of Community Colleges, 2016). Community colleges in the United States received most of their revenues from state sources (29.8%), followed by tuition (29.5%), local sources (18.1%), and federal sources (14.1%) (American Association of Community Colleges, 2016).

State Higher Education Governance and Appropriations

Appropriations are central to state-level policies affecting postsecondary institutions, particularly for community colleges. State governments have funded public community colleges and supported institutional development more than the federal government through the course of higher education history in the United States (American Association of Community Colleges, 2016; Archibald & Feldman, 2006; Cohen & Kisker, 2010; Thelin, 2011). State legislatures regularly committed funds to the leading public institutions of higher education during the early 1900s due to the

prosperity, a growing national economy, and expanding tax bases of the time (Cohen & Kisker, 2010; Thelin, 2011). State-funded research institutions became permanent fixtures in legislative budgets and were funded as if they were traditional state agencies (Cohen & Kisker, 2010). State governments west of the Mississippi River funded half of the operating costs of their public institutions from the 1920s to the 1940s (Cohen & Kisker, 2010). However, the events of the Great Depression disrupted the way state governments had financed their institutions of higher education. State appropriations sharply declined in the early 1930s along with foundation grants, capital spending, and faculty salaries (Cohen & Kisker, 2010; Thelin, 2011).

The U.S. system of higher education began to experience substantial growth during the three decades from 1945 to 1975. The President's Commission on Higher Education recommended in 1948 that at least 50% of high school students could benefit from at least 2 years of college, which could be provided by community colleges (Cohen & Kisker, 2010; Thelin, 2011). Cohen and Kisker (2010) postulated that many states, including Arizona and Florida, were enabled by the massive economic expansion in the mid to late 1940s to establish large community college systems. Institutions in the western United States expanded to build branch campuses; converting specialized colleges to all-purpose institutions, and opening community colleges. Over 500 community colleges were established in the United States from 1945 to 1975 because of this expansion (Cohen & Kisker, 2010, p. 199).

The massive economic expansion coupled with rising fees at universities and low tuition rates offered by community colleges augmented the demographic trends of the time to push community college enrollment growth to unprecedented levels (Cohen &

Kisker, 2010; Thelin, 2011; Sievert, 1971). Cohen and Kisker (2010) elaborated on the growth of enrollments during these times:

> The public community colleges charged little tuition, and in most cases their students were able to live at home and commute. The doors swung wide open and the population surged, so much so that the managers of higher education institutions took the position that growth was salutary and stasis or decline in enrollment meant that people were being denied access. Anyone who did not want to attend college was considered misguided and in need of special encouragement. (p. 209)

By 1975, U.S. community colleges enrolled over 5 million students, which was the same size as the entire national higher education enrollment figures from 12 years earlier (Cohen & Kisker, 2010, p. 207). Institutions of higher education had enjoyed recognition as being valuable components of the public good from the 1940s through the mid-1970s as the public acknowledged the value of research for the enhancement of industry and national defense (Cohen & Kisker, 2010). However, there was a slowing of growth of community colleges in the late-1970s, and therefore a slowing of funding. From 1945 to 1975, tuition revenues had covered one-third of instructional expenditures, but proportions of operating costs financed by tax dollars began a steady decline.

State-level governing boards for community colleges underwent major changes from 1963 to 1989 (Tollefson, 1996). States with state-level community colleges increased from 38 to 49 from 1963 to 1989 (Tollefson, 1996). Additionally, states that governed community colleges through state boards of regents increased from five to 13 during this time (Tollefson, 1996). The expansion in state-level community college

governance coincided with an overall trend of downsizing and consolidation among higher education institutions beginning in the mid-1970s (Cohen & Kisker, 2010; Tollefson, 1996). This process resulted in a larger share of teaching being performed by part-time, adjunct instructors. By 1975, the percentage of adjunct instructors exceeded 50% of all community college instructors, rising a full 10% since 1970 (Cohen & Kisker, 2010, p. 223).

An additional phenomenon of the 1970s is that tensions between faculty members and their governing boards grew. Cohen and Kisker (2010) pointed out that the differences between governing boards or state officials who wanted to rationalize institutional costs and faculty members who wanted to pursue their own academic interests seemed irreconcilable during the 1970s (p. 304). Despite such challenges, community colleges grew, most types of higher education were preserved, and faculty salaries continued to rise. Cohen and Kisker (2010) revealed the seemingly unstoppable enrollment growth of all higher education in the 1970s was considered one of the emerging challenges of the time:

> By the end of the Mass Higher Education Era, the system had become so complex and so successful that it ignored criticism the way that a supertanker traveling at high speed shrugs off an errant wave. It was a huge economic engine devouring billions of dollars per year. It had mitigated the problem of access for everyone who wanted to attend by erecting a thousand community colleges, even while preserving every type of college that had ever been founded: residential and commuter; liberal arts and occupational; single-sex and coed; religious and

> secular. Its faculty gained salary increments that were bringing them into the category of adequately paid professionals. (p. 305)

In the 1990s, colleges and universities faced challenges brought about by the rise in demands for institutional accountability from state agencies, accrediting bodies, and the newly formed "super boards" that were created in many states to consolidate control of public higher education institutions (Cohen & Kisker, 2010). Cohen and Kisker (2010) elaborated on the involvement of both the federal and state governments with accountability measures regarding state colleges:

> Hovering over all was the federal government, which assumed regulatory power in particular areas. As federal and state regulations multiplied, the word *compliance* entered the vocabulary of higher education. Institutional research and affirmative action offices expanded as more types of data and documentation were needed [given the availability of data due to changes in technology]. The self-governing campus was a fading memory, as the big business of higher education became ever more subject to extramural management. (p. 379)

The challenges of the demand for accountability from higher education institutions were augmented by economic challenges in the 1990s.

The economic recession during the first half of the 1990s brought about the simultaneous challenges of an increase in public demand for state services combined with declining tax revenues to state institutions (Mumper, 2001). Mumper (2001) investigated these challenges and grouped the policy responses of the state governments into four categories: (a) controlling institutional expenditures, (b) increasing institutional revenues, (c) redesigning delivery systems, and (d) increasing the resources of families and

students. State governments controlled institutional expenditures through mandating improved efficiency and productivity, performance funding, and price controls (Mumper, 2001). Accordingly, state governments have increased expenditures for public colleges and universities to offset increasing costs of providing higher education to students (Mumper, 2001). Public institutions of higher education responded to these state policy changes in three general ways: (a) offering lower tuition, (b) offering high levels of student aid funding combined with high tuition rates, and (c) raising non-resident tuition rates (Mumper, 2001). State governments, in their attempts to prevent exuberant postsecondary tuition and fees, attempted to redesign delivery systems of higher education by shifting to lower cost providers as well as by creating and encouraging virtual universities and distance learning programs (Mumper, 2001). Additionally, Mumper (2001) stated that several state governments across the United States offered methods of increasing the resources of postsecondary students and their families through fee exemptions and tuition waivers.

Differences between federal and state subsidies for public colleges have increased in several states since the turn of the century. An example of this disparity between federal and state funding could be found the state of Texas from 2004 through 2014 (Texas Higher Education Coordinating Board, 2004; Texas Higher Education Coordinating Board, 2014a). Policymakers constructed most state budgets by making incremental adjustments to the previous year's, or session's budget. State appropriations remained relatively flat in Texas from 2004 to 2014 whereas federal restricted subsidies to Texas public colleges and universities increased (Texas Higher Education Coordinating Board, 2004; Texas Higher Education Coordinating Board, 2014).

Over the past several decades, state higher education appropriations have been in a constant state of flux as they are considered discretionary and are often determined in part by caseloads or enrollments (Zumeta, 2005). Additionally, state appropriations for higher education do not carry mandatory or near-mandatory statuses would otherwise guarantee institutional funding each legislative cycle (Zumeta, 2005). Furthermore, the higher education and community college line items in state budgets are often at odds with, and out prioritized by, state functions such as prisons, public schools, and the distribution of Medicare (Zumeta, 2005). As such, community colleges and their governing boards in all states continue to be subject to policies that are subjected to the effects of partisan politics, demographic trends, economic conditions, and competition with K-12 educational programs (Dar, 2012; Dar & Lee, 2014; Humphreys, 2000; Klein, 2015; McLendon, Deaton, & Hearn, 2007; Schmidt, 2002; Trostel & Ronca, 2009).

Community college appropriations have accordingly decreased in Texas. There were no increases in Texas state appropriations for public institutions of higher education from 2004 to 2014 that were substantial enough to offset the operational costs of institutions. During the entire decade between 2004 and 2014, total Texas state appropriations for community colleges increased by 43.21% while total institutional operating costs increased by 65.84% (Texas Higher Education Coordinating Board, 2004; Texas Higher Education Coordinating Board, 2014).

Federal Higher Education Governance and Appropriations

A general overview of federal higher education policy is required to understand the circumstances within which state governments undergo their processes of determining policy and allocating appropriations to their postsecondary institutions. The federal

government has had a long tradition of indirectly subsidizing U.S. colleges and universities. Higher education institutions received income via the Smith-Lever Act of 1914 that funded practical programs, and the Smith-Hughes Act of 1917 that funded programs that trained vocational educational teachers (Cohen & Kisker, 2010).

Indirect federal financing of colleges and universities played a significant role in the survival of U.S. higher education during the Great Depression, whereas its role had been much less visible by comparison during the decades preceding the 1930s (Cohen & Kisker, 2010; Thelin, 2011). Cohen and Kisker (2010) noted that the National Youth Administration and the Public Works Administration funded the construction of residence halls and provided part-time jobs to students respectively during the 1930s while scientific research was funded by multiple federal agencies. The researchers stated that federal funding of higher education grew by 6.6% from 1930 to 1940 and continued to increase, specifically in terms of funding research, after the start of World War II (Cohen & Kisker, 2010). Enrollment growth for all U.S. higher education institutions was enhanced through the Student War Loan Program, with disbursements exceeding $2 million in 1943 (Thelin, 2011).

There was a significant change in federal subsidies for U.S. institutions of higher education in the 1960s (Hearn, 2001a). Congress changed course after awarding modest amounts of financial aid to needy students in 1963 and in 1964 (Hearn, 2001a). Perhaps the single-most important public enhancement of enrollments in community colleges, and in all U.S. higher education, was the Higher Education Act of 1965, which included federally mandated expansions of financial aid to students as well as financial assistance to institutions to address societal issues (Cohen & Kisker, 2010, p. 254). Students were

awarded federal financial aid in various forms, including Pell grants, through Title IV to the Higher Education Act of 1965 and subsequent amendments. Despite the shift in focus of federal aid from research to students, competition for educational resources continued as research funding was still sought and received by research institutions. Cohen and Kisker (2010) elaborated on the state of federal research dollars after the perceived shift of federal aid from research to students:

> The main federal support for higher education shifted eventually from research to aid to students, which expanded manifold after the Higher Education Act of 1965 went into effect. But for two decades expenditures for research grew even while enrollments were soaring. At the conclusion of World War II, federal contributions were evidenced by the pool of qualified researchers on staff at universities and the number of scientific and technical laboratories that had been built. Not wanting to waste this accumulated wealth of talent and capability by retreating to prewar levels, the universities sought continuing support from the federal government. (p. 273)

The increase in federal resources to postsecondary institutions came with increased oversight as Congress incentivized the states to establish the coordinating bodies through the addition of amendments to the Higher Education Act of 1965. Although many states established coordinating bodies, improvements in the financial situations of public institutions of higher education were not immediately visible (Cohen & Kisker, 2010).

Moving into the 1980s, the U.S. Congress began to change higher education policy in reaction to the higher education crisis of the 1970s by offering incentives to the states that opted to establish higher education coordinating bodies, which would enable

the states to serve as intermediaries to the federal government as well as enable them to control better their postsecondary institutions (Thelin, 2011). Enhanced oversight coupled with economic turmoil affected higher education through the 1980s and many postsecondary intuitions were on the brink of financial collapse although most institutions survived and remained operating (Jaschik, 1985; Scully, 1981; Thelin, 2011).

By 1990, overall federal awards of available student aid grew by 40%. However, federal student aid policy has fundamentally changed as the amounts student financial aid loan awards (i.e., Title IV Pell grants) declined and were increasingly replaced by the issuance of federal loans (i.e., Stafford loans) to students who sought federal financial assistance from the 1980s and into to the 1990s (Hearn, 2001a; Hearn & Holdsworth, 2004). Hearn (2001a) called this phenomenon of a federal shift from awarding grants to awarding loans the "paradox of federal student-aid policy" (p. 272). According to Hearn (2001a), the paradox of federal student-aid policy comprised three major phases: (a) the initial passage of the Higher Education Act of 1965, characterized by the distribution of funds at the campus-level to lower-income and lower-middle income students; (b) the expansion of federal student financial aid under the 1972 amendments to the Higher Education act of 1965, characterized by increases in the amounts of student in the midst of increasing economic and political tension; and (c) the passage of the Middle Income Student Assistance Act, characterized by an increase of the number of recipients of Title IV loans, a decrease in recipients of federal grants, and the ensuing destabilization of federal student financial aid policy.

Zumeta (2005) argued that the growth patterns of federal funding of higher education institutions have been erratic since 1980. Following steady increases during

the 1960s, the federal government decreased spending on public higher education from the 1970s to the 1990s in a similar pattern to state governments (Cohen & Kisker, 2010; Thelin, 2005). The primary contributing factor to the flux of federal higher education funding has been a systematic shift of the cost burdens away from government and toward students and their families (Zumeta 2005). This shift materialized through a conversion in federal financial aid from grants to loans and loan guarantees (Hearn & Holdsworth, 2004; Zumeta, 2005).

The 1990s entailed significant federal funding challenges to community colleges in terms of direct and indirect subsidies. The proportions of revenue contributed by the federal government to higher education had decreased from 16% of operational costs in 1975 to 12% in 1993 (Cohen & Kisker, 2010, pp. 379-380). From 1976 to 1994, federal grants fell from 80% to 28% of federal financial aid, placing most tuition financing on students and their families (Cohen & Kisker, 2010, p. 405). Consequently, community college tuition doubled from 1983 to 1993 (Cohen & Kisker, 2010). The reductions in federal funding to community colleges were exacerbated by competition in the late-1990s from 4-year institution that lobbied the federal government to limit the size of Pell-grant awards to students attending 2-year institutions (Burd, 1997). Community colleges have continued to face challenges in terms of federal funding into the second decade of the 21st century (Brush, 2005; Evelyn, 2002; Phelan, 2014).

A Focus on State-level Community College Policy

Despite the importance of direct and indirect federal financing of U.S. institutions of higher education, the state governments are the originators of community colleges, which are the institutions of focus in this dissertation. Hutcheson (1999) asserted that

historians of higher education have paid inadequate attention to the funding of community colleges. Cohen and Kisker (2010) expounded the origins of community colleges:

> In many states the community colleges evolved from the public schools with a tradition of locally elected school boards, and in their early history the colleges were governed by the same boards. When they separated from the lower schools, their own boards followed the pattern of being locally elected. This method of selection means that the board members themselves must be politicians soliciting support from the various constituencies in their district. (p. 388)

Inequities between universities and community colleges have developed alongside the increasing operational costs of elite public and private higher education institutions in the United States. There have been inequities between state funded flagship institutions and colleges since the inception of the latter. Cohen and Kisker (2010) argued that there was a growth in part-time and commuter students at the turn of the 19th century as many students began attending municipal colleges, junior colleges and commuter student-accommodating universities. However, the older residential 4-year institutions could provide collegiate life experiences that the community colleges could not replicate (Cohen & Kisker, 2010).

Cohen and Kisker (2010) pointed out that colleges struggled financially during times at the turn of the 20th century despite that the elite institutions continued to be well-funded. Elite institutions held the advantage of financial stability in relation to community colleges and commuter student accommodating universities (i.e., universities in close proximity to residential areas) along with the ability to facilitate holistic student

development experiences (Cohen & Kisker, 2010; Thelin, 2011). Community colleges, however, had to rely on the support of the federal and state government. The generosity of the public was contingent on the perceived value of higher education as a public good worth investing in. The issues faced by community colleges continue to be exacerbated by the ongoing challenges of technology, which may fundamentally change educational operations and cause a shift away from the local governance toward greater involvement by state governments in the coordination and governance of community colleges (England, 2016; Fletcher & Friedel, 2017).

Current State of Higher Education Appropriations

A literature review on the current state of higher education appropriations was conducted for the reasons of augmenting the historical overview of state-level higher education policy, appropriations, and economics as well as to assess the related scholarly literature to set the context for the narrowed focus on community colleges of the subsequent chapters of this dissertation. The variations in state and federal higher education appropriations over time have significantly affected the efficiency of public community colleges in terms of academic output and accessibility (Hearn, 2001a, 2001b; Lewis & Dundar, 2001; Gladieux & Wolanin, 1976; Mumper, 2001; Ness & Tandberg, 2013; Paulsen 2001a; Paulsen 2001b; Robst, 2000; Toutkoushian, 2001; and Weerts & Ronca, 2012).

Ness and Tandberg (2013) measured the effects of three independent variable categories on state general fund and capital expenditures for higher education. The three categories utilized by the authors included (a) political variables, (b) higher education variables, and (c) economic and demographic variables (Ness & Tandberg, 2013). Ness

and Tandberg (2013) demonstrated a convergence and a divergence of the determinants of state higher education appropriations between their general expenditures models and their capital spending models. The authors presented three notable observations to augment their aforementioned findings: (a) the budget powers of governors had a statistically significant positive effect on general fund expenditures but had negative and significant effects on capital expenditures; (b) political ideology has no significant effect on general fund expenditures, yet it has a statistically significant positive effect on capital expenditures; and (c) there was a statistically significant negative correlation between state Medicaid expenditures and general fund expenditures but with no statistically significant correlation to capital expenditures (Ness & Tandberg, 2013).

Fluctuations in state higher education expenditures have affected tuition rates at postsecondary institutions. Mumper (2001) unveiled three primary factors in the rise of postsecondary tuition in the late 20th century: (a) states have failed to significantly increase higher education appropriations; (b) spending by public colleges has increased on items such as computing facilities, student services, and compensation for administration and faculty; and (c) colleges are expending increasing resources to provide remedial courses that prepare students to do introductory coursework. Mumper (2001) contended that states provided most appropriations directly to universities and colleges in the form of instructional subsidies, which they consequently use to keep their tuition substantially lower than the full cost of providing a higher education. Whereas state governments had provided public institutions of higher education with the majorities of their operationally required financial resources, the recipient institutions retained considerably high levels of autonomy in financial and administrative operations

(Mumper, 2001). Mumper (2001) further maintained other state budget line-items—especially state Medicaid expenditures, prisons, and corrections—often competed with higher education as a funding category. The averages of each of the above-mentioned line items increased at higher rates than higher education (Grapevine, 2016).

Not only do shifts in public appropriations for colleges and universities affect the costs bared by students and their families, the overall returns on their investments are affected by diminishing public funding. Paulsen (2001b) scrutinized the role of human capital theory in connection to U.S. higher education by analyzing how the rational student decision-making is affected by factors including direct costs, foregone earnings, and earnings differentials. Lewis and Dundar (2001) provided several measures of microeconomic theories of costs and productivity that inform better the development and assessment of the financial policies and practices of institutions of higher education.

Robst (2000) asserted that larger university systems are generally more efficient in comparison to smaller university systems, an assertion that could apply to community college systems. The author revealed that states within the middle ranges of higher education expenditures ($800 million in state higher education appropriations in 1990-1991 dollars) are more efficient than states with the either the highest or the lowest shares of total higher education expenditures provided by state appropriations (Robst, 2000). A frontier cost function, which is frequently utilized in observing production costs in industrial plants, was incorporated by Robst (2000) to discern the efficiency of providing higher education by considering the difference between the predicted minimum cost and the actual cost to be “excess.”

Robst (2000) accomplished the measuring of this frontier cost through uncovering a relationship between the share of expenditures from state appropriations and the levels of institutional efficiency. The author revealed that on average, states appropriate 20% above the minimum estimated frontier costs, per the results of his models (Robst, 2000). Furthermore, Robst (2000) demonstrated that inefficiency is reduced to minimal levels when the share of total higher education funds from state appropriations is approximately 45%. Robst (2000) asserted that efficiency was likely to increase if the share of total higher education funds from state appropriations approached 45% from higher percentages. However, inefficiency was likely to increase if the state share of total higher education appropriations fell below 45% (Robst, 2000).

Other factors can affect state-level higher education appropriations in addition to efficiency and inefficiency. Weerts and Ronca (2012) presented multiple findings through their research investigation of the differences in state support for higher education: (a) state context was important in shaping support for all different types of institutions within a state; (b) institutional mission (e.g., Carnegie class) was instrumental in predicting which types of institutions will be best supported by their states; (c) using percentage changes, as opposed to changes in dollar amounts, was a more accurate in measuring support for higher education as a dependent variable; (d) there were large amounts of variation among states for support of higher education, but little variation within states; and (e) the findings in the study were limited in the generalizations they yielded regarding a complete overview of state support for higher education.

Doyle (2012) observed the effects of the size of private enrollment in a state and the level of governmental liberalism in a state on three dependent variables that included

(a) state tax appropriations for higher education on a per-student basis, (b) tuition and required fees at public four-year colleges and universities for all states, and (c) the total amount of state student financial aid on a per-student basis. Doyle (2012) accordingly revealed that tuition levels are related both to the role of private institutions within a state and to the levels of government liberalism within a state as well as that economic characteristics seemed to play the most significant role in within-state changes in higher education appropriations, even over the political characteristics of the state. Conversely, Doyle (2012) did not uncover any substantial relationship between liberal ideology and levels of state financial aid.

Community colleges are most affected by state appropriations and community college students have needs that are often different than university students (Archibald & Feldman, 2006; Bailey, Jaggers, & Jenkins, 2015; Delaney, 2011; Mukherjee, McKinney, Hagedorn, Purnamasari, & Martinez, 2017). Mukherjee, McKinney, Hagedorn, Purnamasari, & Martinez (2017) demonstrated that community college students who experience heavy financial burdens are less likely to feel confident in their abilities to complete their degrees and are therefore more likely to drop out of college altogether. As such, consistency in state community college funding in second decade of the 21st century is as relevant and as important as it was at any time in the past.

Statement of the Problem

State legislatures have continued to systematically decrease appropriations for higher education and community colleges since the later part of the 20th century (Kennamer, Katsinas, Hardy, & Roessler, 2009; Klein, 2015; Phelan, 2014; St. John & Paulsen, 2001; Thelin, 2005). Bowen (1977) opined that society at-large benefitted from

higher education as much as the individuals who underwent its processes. However, the societal value of higher education has gone largely unacknowledged by state policymakers. Popular policymaking trends, including the incentive-based performance and privatization that originated the 1970s, steered U.S. institutions of higher education into a dire state of economic and financial affairs (Thelin, 2011).

Whereas elite research universities and colleges with sizeable surpluses of qualified applicants can sustain increases in tuition and fees, community colleges have had to look for alternative methods of preserving and growing their enrollment pools while minimizing tuition and fees, such as pursuing training partnerships with private firms and soliciting private donations (Bailey, 1987; Zumeta, 2005). Institutions of higher education in the United States, particularly community colleges, have operated under incrementally increasing pressure to provide more directly visible services despite systematic decreases in public funding (Hirschorn, 1988; Thelin, 2005; Zumeta, 2005). Zumeta (2005) postulated that all institutions of higher education could attempt to privatize their streams of revenue by more aggressively seeking quasi-commercial ventures as well as donations. However, such ventures often serve the purposes the private firms over the primary educational missions of the institutions involved (Zumeta, 2005).

Institutions of higher education, especially community colleges, cannot be steered by private interests if they are to provide public constituent groups accessible and equitable educational opportunities (Brown, Butler, & Donahoo, 2005; Zumeta, 2005). Fuller (2014) opined that the once locally driven and philanthropic nature of federal financial aid to students shifted to a system beholden to political discourse. It is the

assertion of this dissertation that the political shift in federal financial aid acknowledged by Fuller (2014) extends to state-level higher education policy related to community colleges. Moreover, this dissertation will acknowledge the hypothesis that state community college funding is significantly affected by state politics, which are driven by discourse, economic factors, and population growth/decline. The abovementioned hypothesis will be tested in this dissertation. The topic of state-level community college policy and funding will be addressed from the broadest scope via a systematic literature review to a gradually narrower scope. Multivariate analyses will be utilized to understand better the predictive values of political elements, demographic shifts, and economic factors on state-level community college appropriations and to understand better the relationships between public funding fluctuations on the outputs of Texas community colleges.

Purpose of the Study

The purpose of this dissertation is to contribute to the understanding of, and discourse on, the nature of how community colleges are affected by state-level policy. Creswell (2011) revealed a definition of discourse influenced by Freshwater (2007): "a set of rules or assumptions for organizing and interpreting the subject matter of an academic discipline or field of study" (p. 277). Toward the end of contributing to the discourse on the nature of state-level community college policy, the researcher will place emphasis on (a) what characterizes the research literature on state governance and funding of community colleges, (b) what are the primary causes of fluctuations in state appropriations for community colleges, and (c) how fluctuations in state, federal, and local appropriations affect the functionality of community colleges.

A secondary purpose of this dissertation will be to address the topic of state-level community college policy through a methodological system of data collection and analysis according to a postpositivist approach that entails elements of both qualitative and quantitative data analysis methods. Boote and Beile (2005) emphasized that successful researchers must develop productive research questions that transcend superficial understandings of their chosen research topics. Respectively, the general questions that will be addressed in this dissertation were developed with functional practicality in mind. The general questions were designed to assist higher education practitioners in their respective functional roles as well as to assist researchers in academic fields related to higher education administration. Consequently, the following research questions were addressed in this dissertation: (a) What is the current state of the literature on state policies governing community colleges in the United States?; (b) What are the determinants of state spending on community colleges across the United States?; and (c) How do fluctuations in public appropriations affect the measured outputs of graduation and persistence rates of Texas community college students in combined and isolated forms?

Additionally, each of the three general questions in this dissertation were addressed separately in Chapters II, III, and IV. Sub-questions related to the abovementioned research questions were addressed within in the chapters as primary research questions for each of the chapters. The research question addressed in Chapter II was: What are the emergent themes in the research literature related to state-level policies affecting community colleges in the United States? The following research questions were addressed in Chapter III: (a) What political affiliations, population trends,

and economic factors predict likelihood of state governments' increases or decreases in appropriations granted to community colleges?; and (b) Of these items, which are the best predictors? The research questions in Chapter III addressed the state legislative cycles over a 4-year period, from 2010 to 2014. Finally, the research questions addressed in Chapter IV were: (a) What are the relationships between public (i.e., federal, state, and local) financial inputs and the outputs of Texas community colleges as measured in graduation and persistence rates?; and (b) Of these inputs, which ones have the greatest effect on the graduation rates and persistence rates of Texas community colleges? The research questions in Chapter IV were centered on each fiscal year ranging from 2011 to 2015.

Educational Significance of the Study

This dissertation was conducted with multiple motivations and intentions on part of the researcher. The primary motivations behind this dissertation were a desire to contribute to the public good as well as a desire to contribute to the body of scholarly literature available on the topic of the public policy of community colleges. It was the intention of the researcher to provide a theoretical foundation of state-level community college policy, based on the available scholarly literature, to stakeholders in community colleges and the services they provide. An additional intention of the researcher was to equip stakeholders in community colleges with a predictive model to assist in the foresight of future fluctuations in community college appropriations. Finally, the researcher intended to provide stakeholders in community colleges with an enhanced understanding of how their community colleges rely on, and are affected by, changes in levels of public funding within the perspective of an individual state.

Theoretical Framework

The postpositivist perspective constituted the theoretical framework of this dissertation. Although this study was empirical in nature, individual perspectives must be considered to augment the objectivity of quantitative analysis for the sake of enhanced validity. St. John and Paulsen (2001) contended that individuals are situated in a class-based internalized set of viewpoints and beliefs about their social world, from which individuals receive via their immediate social, cultural, and familial environments and experiences. Lincoln, Lynham, and Guba (2011) asserted that it is more useful to investigate how and where paradigms exhibit confluence and differences than it is to argue how paradigms are in contention (p. 97). Although the authors had once postulated that separate paradigms (i.e., positivist and constructivist) are incommensurable, they shifted their position to acknowledge that paradigm perspectives may be combined "so long as the models share axiomatic elements that are similar or resonate strongly" (Lincoln, Lynham, & Guba, 2011, p. 126). Greene and Caracelli (2003) promoted the position of the "dialectic stance," in which multiple paradigms may be integrated into a single study. The researcher adhered to a single postpositivist position and perspective in the study despite Creswell's (2011) argument that sense can be made from the linking of different paradigms and research designs.

The paradigm of postpositivism will guide this dissertation. The previously mentioned argument for paradigm mixing, offered by authors including Lincoln, Lynham and Guba (2011) and Greene and Caracelli (2003), reinforce the notion that multiple research methods (e.g. qualitative, quantitative, and mixed methods) that could fall under different paradigms can be incorporated into a single study that adheres to a single

paradigm. Whereas the methodologies of the studies included in this dissertation cannot be fully categorized as "mixed methods," the pragmatism and blending of perspectives prominent in academic writing on the mixed methods approach is connected to the postpositivist paradigm that was adopted in this dissertation.

Definition of Terms

The term *state-level community college policy* refers to legislation, appropriations, and regulations implemented, enacted, or promulgated by state governments that directly or indirectly affect the operation, growth, and financial viability of their constituent community colleges. The term comprises two concepts: (a) funding of community colleges by state governments and (b) regulation of community colleges by state governments. The concept of state funding of community colleges entails the action of a state government funding its public community college systems, in part or in whole, through the legislative and the appropriations processes. The concept of state regulation of community colleges includes any actions related to the legislative or regulatory processes of state governments that directly or indirectly affect the operations of their constituent community college systems.

Delimitations

The empirical limitations to this proposal and subsequent dissertation were threefold. First, the archival data for the qualitative and quantitative analyses that were conducted in Chapter II were limited to the period from 2006 to 2017. Second, the archival quantitative data for the statistical analysis that was conducted in Chapter III were limited to the time between 2010 to 2014. Third, the archival quantitative data for the statistical analyses that were conducted in Chapter IV of this dissertation were limited

to Texas community colleges and did not include private institutions, Texas public universities, or institutions of higher education outside of Texas for the time between 2011 and 2015.

Limitations

The researcher acknowledged limitations of both the conceptual and empirical varieties in this dissertation. Cohen and Kisker (2010) revealed that higher education outcomes could be extremely difficult to measure in terms of impacts, benefits, or outcomes. Howe (2004) countered the purist stance and advocated for pragmatism, denying any epistemological incompatibility between quantitative and qualitative methods. Teddlie and Tashakkori (2011) cited Biesta (2010) to contend, "pragmatism cannot be seen as a philosophical position among others, but rather as a set of tools that were designed to solve problems" (Teddlie & Tashakkori, p. 290). Despite the prevalence of the incompatibility thesis in the cannon of research methodologies, Johnson and Onwuegbuzie (2004) proposed a *delinking* of methods and paradigms by positing that individual paradigms can be linked to multiple research methods. Accordingly, paradigm justification does not mandate specific methods of data collection and analysis (Johnson & Onwuegbuzie, 2004).

In acknowledgement to the postpositivist paradigm, within which reality cannot be fully know in its entirety (Creswell, 2011; Lincoln, Lynham, & Guba, 2001), the researcher allowed for flexibility in combining qualitative and qualitative methods of data collection and analyses in the first of the three studies in this dissertation. The inherent philosophical limitation in the methodological approach is that neither the qualitative nor the quantitative were fully committed to by the researcher in establishing the contextual

basis of state-level community college policy in the grand spectrum of this dissertation. The contextual basis of the first study formed a foundation for the subsequent studies of state community college policy. Accordingly, the second and third studies of this dissertation entailed strictly quantitative methodological orientations. Although the three studies included in this dissertation may be considered independent studies, they collectively embodied both qualitative and quantitative approaches in acknowledgement of the postpositivist paradigm as interpreted by the researcher.

Assumptions

The researcher assumed that all archival data collected from state, federal, and private entities were correct and accurate. The assumptions of multiple regression analyses in Chapter III and in Chapter IV were tested prior to conducting data analyses (Field, 2013; Meyers, Gamst, & Gurino, 2013).

Organization of the Study

It is important to note that the chapters in this dissertation were written in the languages of both qualitative and quantitative methods. Teddlie and Tashakkori (2011) revealed that tendencies for form a "new mixed methods language" as well as *bilingual* tendencies to combine qualitative and quantitative language have emerged since 2003 (p. 291). The methodology language of this dissertation fell into the latter category, as the researcher conducted a largely qualitative study followed by two quantitative studies in acknowledgement of the overall research question addressed. The first study in this journal-formatted dissertation was a systematic literature review, which combined a quantitative descriptive analysis with qualitative techniques.

The systematic literature review in this dissertation was developed in accordance with the Interactive Literature Review Process (ILRP) (Combs, Bustamante, & Onwuegbuzie, 2010). Combs et al. (2010) developed the ILRP to be a meta-framework that involves multiple research approaches, frameworks, models, and theories that facilitate the literature review process. The ILRP entails nine stages: (a) exploring the belief system, (b) initiating the literature review process, (c) selecting a topic, (d) exploring the literature the literature and identifying themes, (e) formulating a focus, (f) analyzing/interpreting/integrating literature, (g) reaching data and closing the literature search, (h) writing the review of the literature, and (i) evaluating the process and product (Combs et al., 2010).

According to Combs et al. (2010), the nine stages of the ILRP are interactive and blended; they allow for the accommodation of new ideas as the process unfolds. During the first stage of the ILRB, the advisor assists the student in becoming aware of the dimensions his/her own belief systems, including (a) overall worldview, (b) research philosophy, and (c) discipline-specific philosophy (Combs et al., 2010). Accordingly, the researcher engaged in discourse that involved dissertation co-chairs regarding the researcher's worldview, research philosophy, philosophy of how community colleges are affected by public policy. The results of the discourse resulted in a recognition of a strongly held sense of societal value attributed to community colleges and a deeply held notion that the phenomenon of state-level community college policy should be analyzed objectively and subjectively wherever possible in order to understand better how institutions are affected by public policy.

Boote and Beile (2005) postulated that doctoral candidates who have sophisticated and thorough understandings of the research literature in their choses fields of study should be expected to demonstrate deep understandings of their chosen topics throughout the entire scope of their dissertations. Consequently, the cannon of research articles analyzed in the systematic literature review augmented the two subsequent studies in this dissertation. Boote and Beile (2005) emphasized that good literature reviews are necessary for good research, but are often not sufficient in themselves. Respectively, two quantitative studies follow the systematic literature, which focused on the community college appropriations policies of 48 of the 50 United States and how the community college appropriations process of an individual state, Texas, affects the measurable outputs of its community colleges. Collectively and individually, the studies in this dissertation demonstrated a thorough grasp of the field of state-level public policy regarding community colleges (Boote & Beile, 2005). Boote and Beile (2005) elaborated on the complexity of educational research and outcomes:

> Education research is difficult because of the complex nature of the phenomena studied. In the face of perennial concerns about the quality of education research and contemporary pressures to reform it, U.S. education research journals have emphasized methods of data collection and analysis and related issues of epistemology. In turn, the emerging literature on preparing doctoral students in education has emphasized methodological sophistication as the key to improving education research. Yet to try to improve education research by focusing on methodological sophistication is to put the cart before the horse. (p. 11)

The organization of this dissertation unfolded in the following parts. First, a systematic literature was conducted to provide an overview and general understanding of the topic of state-level community college policy. A quantitative analysis of the political, demographic, and economic factors that affect community college appropriation levels in 48 of the 50 states followed the systematic literature review. Next, the focus of the dissertation was narrowed to focus on the effects of public funding on community colleges within a single state, Texas, with a second quantitative analysis. Finally, the results of the first three steps were synthesized to assist in understanding better the implications of state-level policies on community colleges to researchers, policymakers, and stakeholders.

CHAPTER II

STATE-LEVEL COMMUNITY COLLEGE POLICY IN THE UNITED STATES: A SYSTEMATIC LITERATURE REVIEW

This dissertation follows the style and format of *Research in the Schools (RITS)*.

Abstract

A systematic literature review of existing research on state-level community college policy was conducted in this study. Scholarly journal articles centered on the topic of state-level community college policy published between 2006 – 2017 were selected for a descriptive and classical content analyses. The classical content analysis of the selected research literature resulted in the emergence of multiple themes that were organized into 80 first-cycle codes and were subsequently categorized into four second-cycle codes. Prevalent themes in the research literature articles on state-level community college policy included *state appropriations*; *policy, governance, and regulation*; *graduation, persistence, and transfer*; *economics*; and *performance-based funding*.

Keywords: State-level community college policy; Systematic literature review

STATE-LEVEL COMMUNITY COLLEGE POLICY IN THE UNITED STATES: A SYSTEMATIC LITERATURE REVIEW

Community colleges in the United States were engendered by policy environments that have existed in a state of constant flux with increasing impacts on institutional means and methods of operation over the course of the last several decades (Dar & Lee, 2014; Dougherty, Natow, Bork, Jones, & Vega, 2013; Friedel, Killacky, Miller, & Katsinas, 2014). Public policy centered on community colleges is frequently subjected to the influences of partisan politics, economic cycles, and demographic shifts (Dar, 2012; Dar & Lee, 2014; Humphreys, 2000; McLendon, Deaton, & Hearn, 2007; Mullin & Honeyman, 2007; Ness & Tandberg, 2013; Trostel & Ronca, 2009). Community colleges across the United States are frequently affected by these influences as public financial support and tuition subsidies form approximately half of their operating revenues (Cohen & Kisker, 2010; Friedel, Killacky, Miller, & Katsinas, 2012; Thelin, 2011).

Furthermore, the operations and missions of community colleges are steered through regulation and appropriations, often with focuses on performance-based funding programs within several states yielding mixed results (D'Amico, Friedel, Katsinas, Thornton, 2014; Hillman, Tandberg, & Fryar, 2015; Kelchen & Stedrack, 2016; McLendon, Deaton, & Hearn, 2007; Thornton & Friedel, 2016). Mullin and Honeyman (2007) asserted that community college funding is governed by complex relationships between public sources and tuition that have evolved into complicated formulas for steering resources to community colleges. The result is a system in which rising tuition and student debt coincide with increasing enrollments and costly compliance demands

(D'Amico, Katsinas, & Friedel, 2012; St. John & Paulsen, 2001). It is argued here that stakeholders accoutered with a systematic overview of the research literature related to community college public policy will be better prepared to understand the public funding and governance processes of the institutions in which they are vested.

Background of Public Policy Related to Community Colleges

The dominant perspective in the field of higher education public policy analysis consists of applied economic and social theories that acknowledge the societal returns from public investment in higher education (St. John & Paulsen, 2001). Despite pronounced returns on these investments, state legislatures have decreased community college and general higher education appropriations at accelerated rates since the 1980s (St. John & Paulsen, 2001; Toutkoushian, 2001). Zumeta (2005) asserted that higher education is stranded within a paradox of being highly sought after by major societal elements while it is simultaneously constrained in its ability to acquire adequate financial resources from dwindling public sources (e.g., state appropriations and federal funding) via the garnering of effective political support. The author warned that the progress of underserved populations would be marginalized if higher education policies were not conducive to the enrollment of these students (Zumeta, 2005). As such, public investment in community colleges is vitally important to the communities for which they were established. The central challenge to community colleges is performing multiple defined functions while satisfying the demand to demonstrate their relative value beyond the simplistic view of facilitating the first two years of college (Blocker, Plummer, & Richardson, 1965; Voorhees, 2001). Community colleges are frequently regarded as substratal components in the overall higher education system instead of the specialized,

and oftentimes comprehensive, institutions they have become. Conjointly, systematic reviews of public higher education policy are consequently more likely to encompass all categories of postsecondary institution (i.e., colleges and universities). A systematic literature review of scholarly articles written on the topic of public community college policy may help to inform the issue but existing literature tends to focus on public higher education more broadly (Dar, 2012; Dar & Lee, 2014; Tandberg & Hillman, 2014).

What is known about public policy centered on community colleges is that it has entailed a systematic decline of state and federal appropriations since the 1980s and 1990s, respectively, in alignment with economic ebb and flow (Lasher & Greene, 2001; Mumper, 2001; St. John & Paulsen, 2001; Tandberg, 2010; Toutkoushian, 2001; Trammell, 2005; Voorhees, 2001, Zumeta, 2005). Lasher and Greene (2001) stated, "the state of the economy is directly relevant to the fiscal health of higher education" (p. 506). Although federal spending on academic earmarks and state spending on higher education appropriations are connected, subsidizing public postsecondary education is mainly a function of state governments (Archibald & Feldman, 2006; Delaney, 2011).

Focus of the Study

The focus of this systematic literature review was on state-level community college policy. The term *state-level community college policy* refers to legislation, appropriations, and regulations implemented, enacted, or promulgated by state governments that directly or indirectly affect the operation, growth, and financial viability of their constituent community colleges. The term comprises two concepts: state funding of community colleges and state regulation of community colleges. The concept of state funding of community colleges entails the action of a state government

funding its public community college systems, in part or in whole, through the legislative and the appropriations processes. The concept of state regulation of community colleges includes any actions related to the legislative or regulatory processes of state governments that directly or indirectly affect the operations of their constituent community college systems.

Systematic literature reviews are distinguished from general literature reviews in that they provide high-level overviews using formal methods to answer focused questions based on multiple articles (Kisch, 2013; Umscheid, 2013). Additional distinctions are that systematic literature reviews must be comprehensive of the topics on which they are focused; they must also allow for summarization, synthesis, and additional perspectives of those topics (Boote & Beile, 2005; Combs, Bustamante, & Onwuegbuzie, 2010; Creswell, 1994; Hart, 2005; Nortar & Cole, 2010). The following purposes for literature reviews offered by Hart (2005) served as objectives of this systematic review: (a) distinguishing what research has been undertaken from what needs to be undertaken; (b) uncovering important variables relevant to the central topic being investigated; (c) offering a new perspective on the central topic, (d) identifying relationships between ideas and practices surrounding the central topic, (e) rationalizing the significance of the problems in the field of the central topic, and (e) relating idea and theory to application. Although it is widely understood that state-level community college policy has resulted in declining institutional appropriations, few attempts have been made to synthesize the broader literature about what factors have contributed to these declines (Kennamer, Katsinas, Hardy, & Roessler, 2009; Klein, 2015; Phelan, 2014; Thelin, 2005; St. John &

Paulsen, 2001). Such a synthesis may further understandings of the effects of public policy on community colleges versus other types of postsecondary on institutions.

Statement of Purpose

The purposes of this systematic review were to provide an overview of the relevant scholarly literature on state-level community college policy and to construct an analytical foundation for the investigation of state-level community college policy based on the identification of common themes within the prevalent research literature. The intent behind this study was to contribute to the body of state-level community college policy knowledge available to stakeholders in higher education, specifically researchers, policymakers, administrators, students, and taxpayers. An additional goal behind this study was to connect academic research to practical policy analysis by providing a succinct overview of the available research literature through coding, which may inform better the understanding and implementation of newly formulated state-level community college policy. Zumeta (2005) hypothesized that both public and private institutions of higher education will be dependent on supportive public policy if they are to respond effectively to the dwindling availability of public subsidies. Accordingly, this systematic literature review may provide stakeholders in higher education with insights to the nature of state-level community college policy from which a stronger case for increasing public investment could be drawn.

Research Questions

The following questions were addressed in this systematic literature review: (a) What are the characteristics of scholarly literature on state-level community college

policy? and (b) What are the emergent themes in the research literature related to state-level policies affecting community colleges in the United States?

Method

Literature Search

The comprehensive survey of all existing scholarly literature on the topic of state-level community college policy summarized and synthesized the existing literature in a way that enables the formation of a new perspective (Boote & Beile, 2005). The databases offered through the Newton Gresham Library at Sam Houston State University were utilized in this study. The data collection process began with searches for keywords chosen to retrieve articles related to the central focus of this study, state-level community college policy. In-depth searches to locate all possible scholarly journal articles related to state-level community college policy published between 2006 and 2017 were conducted using the EBSCO Discovery Service Database. Each article included in this study was selected from the database in terms of subject focus (state policies specifically affecting community colleges) and scholarly status (the article was published in a peer-reviewed academic journal). Accordingly, the following keywords and phrases were used in the database searches to gather a sufficient pool of articles for this systematic literature review: "*State AND Community College AND Policy*", "*State AND Community College AND Regulation*", "*State AND Community College AND Appropriations*", "*State AND Community College AND Funding*", and "*State AND Community College AND Finance*". Search phrases including the terms "*2-year College*" and "*Junior College*" were used in the initial database searches, but were ultimately excluded from searches for articles to be reviewed in this study. Cohen and Kisker (2010) noted that during the 1970s, the time in

which junior colleges became widely referred to as "community colleges," up to 10% of 2-year colleges in the United States were private institutions. As such, search phrases with the terms "*Community College*" were found to be inclusive of the same relevant search results as phrases including "*2-Year College*" and "*Junior College*," but they were more effective in excluding search returns with articles about private institutions.

An aim of the systematic review was to reach data saturation in locating scholarly articles related to state-level community college policy. *Data saturatio*n was defined as a level of searching in which no new findings (i.e., academic journal articles) were located or new findings had minimal modifying effects (Glasser, 1965). In acknowledgement of the rudimentary connections between state-level community college policy and political science, additional searches for the selected keywords and phrases were also explored in scholarly journals related to higher education, community colleges, and political science/public policy in the EBSCO database.

Inclusion Criteria

Articles included in this systematic literature review were those published from 2006 to 2017 and with state-level community college policy as a primary focus in terms of title or content. Journal articles that did not appear to focus on state community college policies based on their title or content (i.e., articles that focus on federal community college policy or articles that focus on state 4-year institutional policy) as well as books, monographs, reviews, and reports were excluded from this study. The numbers of scholarly articles selected for this systematic literature review based on keyword search criteria with Boolean indicators are presented in Table 2.1.

Insert Table 2.1 about here

Data Analysis

Two types of data analyses were conducted on the data collected for this study, quantitative and qualitative. The quantitative data analysis component in this study was a descriptive analysis in which the following data were observed: (a) journal/publication name, (b) publication year, (c) journal focus area (e.g., higher education, community colleges, etc.), (d) primary research method (quantitative or qualitative), (e) main topic of article, and (g) number of first-cycle codes.

The qualitative data analysis component in this study was a classical content analysis conducted using QDA Miner Version 4.1.12 (Provalis, 2014). Trends within the literature were identified and coded into themes generated through the classical content analysis based on first and second cycle coding that enhanced the qualitative aspect of the data analysis (Berelson, 1952; Saldaña, 2013; Strauss & Corbin, 1998). The first cycle codes identified in this study were of four varieties presented by Miles, Huberman, and Saldaña (2014): (a) descriptive coding, which assigns short labels to summarize data; (b) in vivo coding, which translates the authors' own language into codes (for the results and discussion sections of articles when applicable); (c) process coding, which is conducted through gerunds that connote actions in the data; and, (d) evaluation coding, a method that offers judgements about the worth, merit, or significance of policy or programs. First-cycle codes were added and their definitions expanded where appropriate.

The classical content analysis in this study therefore comprised the following steps: (a) organizing the data into first cycle codes from themes identified in the selected research literature, (b) organizing the first cycle codes into second cycle codes, and (c) comparing the codes across code groups. The findings produced through utilization of the classical content analysis are presented according to the second cycle coding and are discussed in the results section of this study (Berelson, 1952; Constas, 1992; Saldaña, 2013). Neither deductive, provisional, nor hypothesis coding were utilized in this study as codes were not generated a priori but were generated during data analysis through inductive coding. Boote and Beile (2005) argued that a quality systematic literature review entails an examination of what has been learned as well as an assessment of what needs to be learned in the field of the topic of focus. As such, suggestions for further investigation will complete this systematic literature review.

Findings

There were an even number of articles with qualitative (n = 24) and quantitative (n = 24) primary research methods selected for this review, with the most articles published in 2014 (n = 12). No scholarly articles on state-level community college policy were found to have been published in 2013. The frequency of publications per year and methods of the journal articles included in this systematic review are illustrated in Table 2.2.

Insert Table 2.2 about here

A shift from qualitative methods to quantitative research methods occurred in published academic literature on state-level community college policy from 2006 to 2017. Qualitative methods were utilized the most frequently in the ratio of qualitative research methods to quantitative methods utilized in articles selected for this study for the years 2006, 2008, 2010, and 2011. Quantitative methods were found to be more prevalent in the years 2012, 2014, and 2016. The two methods were used evenly in articles published in 2015 and 2017.

The process of coding the articles in this review resulted in the development of 80 different first-cycle codes. The five most frequently occurring first-cycle codes were (a) *Appropriations – State*, *n* = 348, or 9% of all codes; (b) *State Policy, Governance, and Regulation*, *n* = 329, or 8% of all codes; (c) *Graduation, Persistence, and Transfer*, *n* = 242, 6% of all codes; (d) *Economics*, *n* = 170, or 4% of all codes; and (e) *Performance-based Funding*, *n* = 160, or 4% of all codes. Each of the five most frequently occurring first-cycle codes also appeared in the majority of all articles, ranging from 64.6% to 91.7% of all observed articles per code, with the exception of *Performance-based Funding*, which appeared in only 35.4% of the articles observed in this review. The first-cycle codes, code categories, descriptions, and second-cycle codes identified in the articles selected for this systematic literature review are presented in the Appendix.

A total of 3,885 individual first-cycle coded entries were subsequently categorized into four second-cycle codes: (a) *Applied Policy*, a second-cycle code that was related to the application of state-level community college policy and comprised 78% of first-cycle coded entries; (b) *Methods*, a second-cycle code that was related to research methods utilized in observing state-level community college policy and

comprised 6% of the first-cycle coded entries; (c) *Negative Perspective*, a second-cycle code that was related to negative perspectives of community college-related policies and future outcomes 12% of the first-cycle coded entries; and (d) *Positive Perspective*, a second-cycle code that was related to positive perspectives of community college-related policies and future outcomes and comprised 4% of the first-cycle coded entries.

Several of the journal articles selected for this review contained rich and meaningful quotes that offered deeper insight to the phenomenon of state-level community college policy. These quotes entailed explanations of factors and conditions that characterized the essence of this policy topic. An excerpt from Waller, Glasscock, Glasscock, and Fulton-Calkins (2006) entailed a rich example of coding overlap, which provided validity to the themes identified in this study. The authors elucidated the origins of community college districts in a fashion that encompasses many of the themes uncovered among several of the articles selected for analysis in this study:

> Under the permissive Texas enabling laws, community colleges were established within a taxing entity. Citizens within these community college taxing districts pay ad valorem property taxes to fund the cost of facility maintenance and operation (M&O) under the oversight of local governing boards. Student tuition, also under the oversight of the local governing boards, has long been viewed by the community college districts as another source of local revenue. This revenue is to be utilized for instructional costs or facility construction, maintenance, and operation. Direct instructional costs are reimbursed by the state through a student-contact-hour based formula process. (Waller, Glasscock, Glasscock, & Fulton-Calkins, 2006, p. 445)

Nine first-cycle codes overlapped in the quote from the study conducted by Waller et. al (2006) were (a) *Access/Affordability*, (b) *Appropriations – Local*, (c) *Appropriations – State*, (d) *Enrollment/Contact Hours*, (e) *Internal Governance*, (f) *Operations/Facilities*, (g) *State Legislation*, (h) *State Governance,* and (i) *Tuition/Fees*.

Patterns of negative codes on the present and future effects of state-level community college policies were also uncovered in several of the articles selected for this review, which provided further validity to the uncovered themes in this study. The negative pattern was assumed a systematic decline in state appropriations allocated to community colleges. A succinct explanation for the reasons behind the systematic decline in state appropriations within a particularly dire contextual setting was offered by Watson, Melancon, and Kinchen (2008):

> For a variety of factors such as globally changing economic considerations, societal/consumer requirements, and the advent of management-model theories becoming acceptable, colleges and universities have found themselves swept up in the same accountability and efficiency trends as private industry. Funding streams and connections to performance funding measures have become even more relevant to postsecondary institutions in an era that has seen some of the worst natural and man-made disasters in history. (p. 204)

Six first-cycle codes were encompassed by the aforementioned quote from the article written by Watson, Melancon, and Kinchen (2008): (a) *Accountability/Outcomes*, (b) Corporatization, (c) *Decrease – Access/Affordability*, (d) *Decrease – State Appropriations*, (e) *Economic Downturn/Uncertainty*, (f) *Emergency/Disaster Preparedness*, and (g) *Tuition/Fees*.

Discussion

The cannon of scholarly literature on state-level community college policy is characterized by the dominance of issues and perspectives centered on funding. Prevalent themes in the research literature on state-level community college policy depicted a policy topic that was influenced by a diverse body of stakeholders with a complex set of needs, expectations, and assumptions. The two most prevalent themes in the selected literature in terms of frequency were *state appropriations* and *policy, governance, and regulation*.

Perhaps most revealing were the themes that followed after the two most prevalent themes in terms of frequency. These themes were indicative of issues that affected state-level community college policy besides the more obvious themes of *state appropriations* and *policy, governance, and regulation*. The third, fourth, and fifth most frequent themes were: (a) *graduation, persistence, and transfer*, (b) *economics*, and (c) *performance-based funding*, respectively. The systematic decline in state appropriations for community colleges may have resulted from legislative sessions in which economic downturns prompted politicians to link formula funding to easily definable metrics that could be used to justify spending cuts. State-level community college policy appeared to be influenced more by these objectively measured outcomes than it was by partisan politics, as the *politics* theme was less prevalent than *tuition/fees*, *enrollment/contact hours*, *federal appropriations*, and *measuring inputs/outputs*. Although community colleges may be less affected by partisan politics than other outlays funded by state legislatures, policymakers should be careful not to overlook the effects and influence of partisan politics in determining the direction of state-level community college policy.

Therefore, economic conditions coupled with performance metrics might be better indicators of increases or decreases in state community college funding regardless of which political parties control state appropriations processes (Dar & Lee, 2014; Delaney & Doyle, 2013; Friedel, Killacky, Miller, & Katsinas, 2014; Hillman, Tandberg, & Fryar, 2015; Humphreys, 2000; Kelchen & Stedrack, 2016).

The body of scholarly research on state-level community college policy from 2006 through 2017 was additionally characterized by a noticeable amount of pessimism toward the future of the circumstances and policies surrounding community colleges. The *negative perspective* second-cycle code was more prevalent in the selected literature than the *positive perspective* second-cycle code by a ratio of almost 4 to 1. The negative outlook that permeated the literature was largely corresponded with a systematic decline in state appropriations for community colleges fueled by tumultuous economic cycles, corporatization, institutional challenges in adequately serving rapidly growing numbers of students, and competing line-items in state budgets (D'Amico, Friedel, Katsinas, Thornton, 2014; Delaney & Doyle, 2013; Humphreys, 2000). Conversely, anecdotes of adaptability and the identification of key challenges throughout the literature offered an element of optimism for the future of community colleges. In addition, some overlapping of *negative perspective* codes and other codes revealed positive items (i.e., the negative *underserved students* code overlapping with the *state legislation* code within the same paragraph indicated that the Colorado Legislature had made laws to help underserved students, a positive item). Thus, the tumultuous community college funding environment could draw the attention of researchers and policymakers who might devise potential fiscal solutions. This was detailed in the aforementioned example as the Colorado

Legislature recognized that many of its constituent students were underserved and resultantly passed legislation to assist them.

Researchers should be mindful of the negative perspectives that permeate the body of scholarly literature on state-level community college policy published from 2006 to 2017 when conducting future research in order to avoid overlooking the emergence of new dynamics and trends. A substantial share of this research was conducted of state higher education appropriations and policy programs at the macro level (e.g., overall state appropriations, state performance-based funding programs, and state-level policy trends). Consequently, more research is needed on the direct effects of state-level policies specific to community colleges on individual institutions, curriculum, and measurable student outcomes per community college (e.g., graduation rates, student success rates, and persistence rates). Whereas many studies focusing on the broad spectrum of higher education have been published, community colleges could benefit greatly from research literature that specifically addresses the context of 2-year institutions.

Implications for Future Research

Community colleges appeared to be valued by most constituencies regardless of state-level partisan political associations and despite declining appropriations over time for institutions (Doyle, 2012). As such, the public at-large could be widely unaware of the systematic decline in community college appropriations while an awareness of increasing tuition appears to permeate public discourse. Accordingly, there may be a disconnect between what the public perceives as an issue relative to the issues that imbue the academic literature. Based on the themes uncovered in this study, institutions were perceived as having been underfunded and as having faced ongoing challenges in

accommodating student demand in systems based on reconciling measured inputs (i.e., federal funding, tuition and fees, etc.) with enrollment fluctuations and measurable outputs (i.e., contact hours, graduation rates, etc.). As such, community college institutions exist in an environment in which increasing expectations are placed on them while decreases in state funding often go unacknowledged.

Suggestions for future research include studies that offer additional insight into how amounts of state appropriations awarded exclusively to community colleges are determined per state, studies that observe the effects of state-level policies on specific aspects of community colleges (e.g., curriculum changes, articulation agreements, measured outputs, etc.), and similar literature reviews on periods of time extending beyond the parameters of 2006 to 2017. Longitudinal studies that extend beyond this time period could improve the ability to examine trends as the broader period of time observed could encapsulate more occurrences of the themes identified in this systematic review.

These suggestions are predicated on the increasing expectations placed on community colleges. The suggested studies would likely provide deeper insight into the phenomena of community colleges and how these institutions serve students while operating in environments of dwindling public resources coupled with increasing demands for accountability. As such, additional studies that are centered on unraveling this dilemma are likely to help stakeholders garner public support for a mixture of sustentation and autonomy for community colleges that will undoubtedly benefit students, their local communities, and the general public.

Conclusion

The body of research literature specific to state-level community college policy is a nascent component of the cannon of general higher education research literature and it could eventually grow to be considered an independent subfield. However, literature specific to state policies affecting community colleges is relatively scarce and more research is needed. General themes centered on governance, funding, student completion, economics, and elements of pessimism were widespread in the currently available literature on state-level community college policy, but less general themes (e.g., tuition, access, politics, etc.) were not as prevalent. Whereas policymakers and stakeholders have traditionally relied on studies centered on overall higher education to guide them in their understanding of community colleges, studies specific to community colleges could provide them with deeper understanding and clearer direction.

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Table 2.1

Search Criteria for Scholarly Journal Articles Selected for Inclusion in the Systematic Literature Review

Academic Journal Title	Search Term "State AND Community College AND Policy"	Search Term "State AND Community College AND Regulation"	Search Term "State AND Community College AND Appropriations"	Search Term "State AND Community College AND Funding"	Search Term "State AND Community College AND Finance"
American Educational History Journal	13 (1)	4 (0)	4 (0)	10 (0)	6 (0)
Community College Journal of Research and Practice	663 (4)	107 (2)	58 (2)	463 (3)	217 (5)
Community College Review	260 (3)	34 (0)	18 (0)	345 (1)	255 (0)
Economics of Education Review	97 (2)	16 (0)	5 (0)	44 (0)	49 (0)
Educational Considerations	30 (1)	3 (0)	4 (0)	24 (0)	15 (0)
Educational Evaluation and Policy Analysis	54 (2)	7 (0)	4 (0)	27 (0)	20 (0)
JEP: Ejournal of Education	20 (1)	6 (0)	2 (0)	8 (0)	4 (0)

(continued)

Academic Journal Title	Search Term "State AND Community College AND Policy"	Search Term "State AND Community College AND Regulation"	Search Term "State AND Community College AND Appropriations"	Search Term "State AND Community College AND Funding"	Search Term "State AND Community College AND Finance"
Journal of Education Finance	41 (2)	13 (0)	27 (1)	41 (1)	43 (0)
Journal of Higher Education	190 (1)	34 (0)	30 (0)	88 (0)	62 (0)
New Directions for Community Colleges	360 (5)	76 (1)	33 (1)	232 (5)	80 (1)
Research in Higher Education	153 (2)	19 (0)	17 (0)	62 (0)	66 (0)
Teachers College Record	27 (1)	1 (0)	2 (0)	5 (0)	5 (0)

Note. The total number of search results and the number of results considered to the relevant to the systematic literature review are presented. The numbers of relevant journal articles selected for the systematic review based on the subject focus criterion are in parentheses and are not duplicated per successive search term. The searches were limited to articles published from 2006 to mid-2017 with duplicates removed. Source types filter: Academic Journals. Limit to: Scholarly Journals (Peer Reviewed).

Table 2.2

Publication Year and Research Methods of Journal Articles Included in Systematic Literature Review

Publication Year	*N* of Articles	Qualitative	Quantitative
2006	6	5	1
2007	2	1	1
2008	4	3	1
2009	4	2	2
2010	1	1	0
2011	1	1	0
2012	5	0	5
2013	0	0	0
2014	12	5	7
2015	6	3	3
2016	5	2	3
2017	2	1	1
Total	48	24	24

Note. All articles included in the systematic literature review were based on either qualitative or quantitative research methods. No articles were considered to be based on mixed-methods paradigm.

Appendix

First-cycle Codes, Code Categories, Descriptions, and Second-cycle Codes

Appendix

First-cycle and Second-cycle Codes of Themes Uncovered in Systematic Literature of State-level Community College Policy

First-cycle	Code Category	Description	Second-cycle
2-year v. 4-year Institutions	Descriptive	This first-cycle code includes items related to comparisons between 2-year institutions and 4-year institutions.	*Applied Policy*
Access/Affordability	Descriptive	This first-cycle code includes items related to community college access and affordability.	*Applied Policy*
Accountability/Outcomes	Descriptive	This first-cycle code entails items related to community accountability and the measuring of community college outcomes by governmental institutions and accreditation agencies via assessments and other methods.	*Applied Policy*
Accreditation	Descriptive	This first-cycle code includes items that are related to accreditation and governance by accreditation boards.	*Applied Policy*
Admin Discretion/Autonomy	Descriptive	This first-cycle code includes items related to levels of community college administrative discretion and autonomy.	*Applied Policy*
Admin/Instruction	Descriptive	This first-cycle code includes items related to issues that arise between community college administration and faculty.	*Applied Policy*
Appropriations - Federal	Descriptive	This first-cycle code includes items related to direct appropriations and indirect appropriations, such as Pell grants.	*Applied Policy*
Appropriations - Local	Descriptive	This first-cycle code includes items related to local appropriations (i.e., ad valorem property tax revenue) as well as the taxing authorities held by community college districts.	*Applied Policy*
Appropriations - State	Descriptive	This first cycle code includes items related to state funding of community colleges, including funding formulas. This code also contains items related to indirect state subsidies to community colleges, such as financial aid, scholarships, grants, and tuition grants.	*Applied Policy*

First-cycle	Code Category	Description	Second-cycle
Articulation	Descriptive	This first-cycle code includes items that are related to articulation agreements in which community college students' earned credits transfer to universities.	*Applied Policy*
Assessment	Descriptive	This first-cycle code includes items related to assessment of students (e.g., ACT and college-ready placement exams).	*Applied Policy*
Bennett Hypothesis	Evaluation	This first-cycle code includes items related to the Bennett hypothesis, in which it is assumed that federal higher education appropriations are subsidized by institutions through tuition increases.	*Applied Policy*
Budget Issues/Problems	Evaluation	This first-cycle code includes items related to observations, perceptions, or assumptions of budgetary problems, budgetary issues, challenges in generating revenue, and/or reduced resources for community colleges.	*Negative Perspective*
Collaborating	Process	This first-cycle code includes items that reflect community colleges collaborating with each other, schools, and/or with state governments.	*Applied Policy*
Cooling Out	In Vivo	This first-cycle code includes items that are related to "cooling out," or the perceived steering of lower-income students away from baccalaureate degrees via vocational and workforce certificate programs.	*Negative Perspective*
Corporatization	Process	This first-cycle code includes items that relate to the corporatization, marketization, and/or profit-maximizing of community colleges.	*Negative Perspective*
Cost Efficiency	Evaluation	This first-cycle code includes items related to the notion that community colleges are cost efficient institutions in comparison with other types of college and universities, including graduate programs.	*Positive Perspective*

First-cycle	Code Category	Description	Second-cycle
Curriculum Aligning	Process	This first-cycle code includes items related to measures taken to align community college curriculum with the curricula of high schools and/or universities. This code also includes items related to internal curriculum alignment (e.g., stackable certificates and credentials).	*Applied Policy*
Decrease - Access/Affordability	Evaluation	This first-cycle code is related to items that assume or imply reduced student access to community college and/or higher education, including issues related to low-income and marginalized students. This first-cycle code also includes items related to increasing tuition and student fees.	*Negative Perspective*
Decrease - Federal Appropriations	Evaluation	This first-cycle code includes items related to decreasing federal appropriations, including indirect appropriations, such as Pell grant funds.	*Negative Perspective*
Decrease - Instructional Support	Evaluation	This first-cycle code includes items related to observed or perceived decreases in community college instructional support.	*Negative Perspective*
Decrease - Local Appropriations	Evaluation	This first-cycle code includes items related to decreases in local appropriations awarded to community college (e.g., revenue from ad valorem property taxes).	*Negative Perspective*
Decrease - Personnel/Salaries	Evaluation	This first-cycle code includes items related to decreases in personnel and/or the salaries of community college personnel, including faculty, staff, and administration. This code also includes items related to hiring freezes.	*Negative Perspective*
Decrease - Political Support	Evaluation	This first-cycle code includes observed or perceived declines in political support for education, higher education, and/or community colleges.	*Negative Perspective*
Decrease - State Appropriations	Evaluation	This first-cycle code includes items related to observed or perceived decreases in state appropriations awarded to community colleges.	*Negative Perspective*

First-cycle	Code Category	Description	Second-cycle
Demographic/Socioeconomic Groups	Descriptive	This first-cycle code includes items related to various student demographic groups (i.e., ethnicity, gender, age, economic status) as well as first-generation college students.	*Applied Policy*
Developmental/Behavioral Theory	Descriptive	This first-cycle code includes items related to the application of developmental psychology and behavioral theories in research related to community college students.	*Methods*
Difficulties Measuring Output	Process	This first-cycle code includes items related to difficulties in measuring the value of community college via outputs (e.g., graduation rates and persistence rates).	*Methods*
Diminishing State Revenues	Evaluation	This first-cycle code includes items related to diminishing revenues of state government.	*Negative Perspective*
Dual Credit/Dual Enrollment	Descriptive	This first-cycle code includes items related to dual credit and dual enrollment policies, in which secondary students can simultaneously enroll in college credit-level courses or community college students simultaneously enroll in university programs of study.	*Applied Policy*
Economic Downturn/Uncertainty	Evaluation	This first-cycle code includes items related to observed or perceived economic/fiscal uncertainty.	*Negative Perspective*
Economics	Descriptive	This first-cycle code includes items related to the notion that the economy, including the business cycle, has effects on community colleges and associated state community college appropriations. Economic effects include unemployment rates and per capita income.	*Applied Policy*
Emergency/Disaster Preparedness	Descriptive	This first-cycle code includes items that are related to emergencies, natural disasters, and disaster preparedness.	*Applied Policy*

First-cycle	Code Category	Description	Second-cycle
Employment and Labor Market Demands	Descriptive	This first-cycle code includes items related to employment of community college students/graduates as well as the creation of programs of study by community colleges to cater to labor market demands via workforce development. Additionally, this code includes items related to student post-graduation earning potential.	*Applied Policy*
Enrollment/Contact Hours	Descriptive	This first-cycle code includes items related to enrollment increases and decreases as well as contact hours and the related challenges faced by community colleges.	*Applied Policy*
Federal Policy, Governing, and Legislation	Descriptive	This first-cycle code includes items related to federal community college policy, governance, regulation, and legislation.	*Applied Policy*
Federal Student Loans	Descriptive	This first-cycle code includes items related to federal student loans.	*Applied Policy*
FTE Perspective	Process	This first-cycle code includes items related to measuring or observing community college-related metrics in terms of full-time equivalent students (FTE).	*Methods*
Fund Raising	Process	This first-cycle code includes items that are related to the implementation of philanthropy, fund raising, and donations to offset decreasing community college revenues.	*Applied Policy*
Graduation, Persistence, and Transfer	Descriptive	This first-cycle code is related to items involving student persistence, completion, graduation, transferring to universities, and non-credit-to-credit.	*Applied Policy*
Increase - Access to Education	Evaluation	This first-cycle code includes items that are related to the increasing of students' access to educational opportunities through community colleges.	*Positive Perspective*
Increase – Administrative Costs	Evaluation	This first-cycle code includes items related to increasing administrative costs for community colleges.	*Negative Perspective*
Increase - Affordability	Evaluation	This first-cycle code includes items related to increasing affordability of community colleges for students.	*Positive Perspective*

First-cycle	Code Category	Description	Second-cycle
Increase - Demands and Missions	Evaluation	This first-cycle code includes items related to the expanding demands placed on community colleges by state governments, service-area communities, and other constituencies. These expanding demands often result in expanding community college missions.	*Negative Perspective*
Increase - Enrollment	Evaluation	This first-cycle code includes items that signify expansion/growth in community colleges and/or their enrollments.	*Positive Perspective*
Increase - Federal Appropriations	Evaluation	This first-cycle code includes items related to increases in federal appropriations awarded to community colleges.	*Positive Perspective*
Increase - Instructional Costs	Evaluation	This first-cycle code includes items related to increases in instructional costs for community colleges.	*Negative Perspective*
Increase - Instructional Support	Evaluation	This first-cycle code includes items related to increases in community college instructional support.	*Positive Perspective*
Increase - Part- to Full-time Faculty Ratios	Evaluation	This first-cycle code includes items related to larger shares of community college classes being taught by part-time (i.e., adjunct) instructors.	*Negative Perspective*
Increase - State Appropriations	Evaluation	This first-cycle code includes items related to increases in state appropriations awarded to community colleges.	*Positive Perspective*
Increase - Student Services Costs	Evaluation	This first-cycle code includes items related to increases in student services costs for community colleges (e.g., admissions, advising, registrar, etc.).	*Negative Perspective*
Increase - Student to Faculty Ratio	Evaluation	This first-cycle code includes items related to increasing student to faculty ratios at community colleges.	*Negative Perspective*
Increase - Technology Costs	Evaluation	This first-cycle code includes items related to increases in the costs of technology for community colleges.	*Negative Perspective*
Institutional Financial Aid	Descriptive	This first-cycle code includes items related to institutional financial aid and grants awarded by community colleges.	*Applied Policy*

First-cycle	Code Category	Description	Second-cycle
Internal Governing	Process	This first-cycle code includes items related to community college leadership, internal governance, expenditures, and implementation of state/federal policies.	*Applied Policy*
Internal Governance Problems	Evaluation	This first-cycle code includes items related to problems and issues in internal community college governance and administration.	*Negative Perspective*
Low Completion/Degree Production	Evaluation	This first-cycle code includes items related to low institutional community college degree production and certificate completion.	*Negative Perspective*
Market-based Reforms	Descriptive	This first-cycle code includes items that are related to market-based "solutions" for higher education, including tuition vouchers.	*Applied Policy*
Measuring Inputs and Outputs	Process	This first-cycle code includes items related to the measurement of community college inputs and/or outputs, outcomes, and data reporting, including quantitative analysis.	*Methods*
Methodological Flaws	Descriptive	This first-cycle code includes items related to actual or perceived flaws in the research methods implemented in studies related to state-level community college policy.	*Methods*
Negative Outlook	Evaluation	This first-cycle code includes items related to perceived negative outlooks and forecasts for community colleges, including negative perceptions of community colleges and their rigor.	*Negative Perspective*
Nontraditional Students	Descriptive	This first-cycle code includes items related to older adult students.	*Applied Policy*
Online/Distance Education	Descriptive	This first-cycle code includes items related to alternative methods of instructional delivery, including online and distance education. Additionally, technological advancements that impact postsecondary education, such as social media and Massive Open Online Courses (MOOCs), are included in this code.	*Applied Policy*
Operations/Facilities	Descriptive	This first-cycle code includes items related to community college operations, facilities, and maintenance.	*Applied Policy*

First-cycle	Code Category	Description	Second-cycle
Partisan Control of State Legislature	Descriptive	This first-cycle code includes items related to control of state legislatures by political parties.	*Applied Policy*
Performance-based Funding	Evaluation	This first-cycle code includes items related to state higher education/community college policies centered on performance-based funding.	*Applied Policy*
Politics	Descriptive	This first-cycle code includes items that are related to political environments, policy environments, political ideologies, public/community support, and community partnerships.	*Applied Policy*
Positive Outlook	Evaluation	This first-cycle code includes items that are related to a positive or optimistic outlook for community colleges and related topics.	*Positive Perspective*
Privatization	Evaluation	This first-cycle code includes items related to the privatization of community colleges.	*Negative Perspective*
Qualitative Analysis	Process	This first-cycle code includes items that are related to qualitative data gathering and analysis (e.g. conducting interviews/focus groups and analyzing the transcription data or document analysis).	*Methods*
Research - 4-Year v 2-Year	Descriptive	This first-cycle code includes items related to topics for which more research has been conducted for relations to 4-year institutions than to 2-year institutions.	*Negative Perspective*
Smaller TOR for CC than 4-Year	Evaluation	This first-cycle code includes items that are related to the total operating revenues (TORs) for community colleges are less than those of 4-year institutions.	*Negative Perspective*
State Legislation	Descriptive	This first-cycle code includes items that are related to state-level legislation that affects community colleges. Additionally, measures such as referendums and initiatives are included.	*Applied Policy*
State Governance	Process	This first-cycle code includes items that are related to community colleges policies and regulations produced by state legislatures as well as governance by state-level governing boards. This code also includes items related to compliance with state policies.	*Applied Policy*

First-cycle	Code Category	Description	Second-cycle
Student Services Operational Costs	Descriptive	This first-cycle code includes items related to the costs of student services and operations.	*Applied Policy*
Student Success	Descriptive	This first-cycle code contains items related to student success, including resources allocated toward instructional support and the student support network. Additionally, items related to attendance, GPA, college-readiness, completion of remedial education, and placement are included in this code.	*Applied Policy*
Survey	Process	This first-cycle code is related to researchers surveying samples as part of their research methods. This code also includes research that entails factor analysis.	*Methods*
Tuition/Fees	Descriptive	This first-cycle code includes items related to community college tuition and fees from in-district and from out-of-district students.	*Applied Policy*
Underprepared/Underrepresented Students	Descriptive	This first-cycle code includes items that are connected to underprepared and/or underrepresented students, including low-SES students.	*Negative Perspective*
Workforce/Vocational/Non-credit Training	Descriptive	This first cycle code includes items that are related to workforce, vocational, and non-credit community college enrollments.	*Applied Policy*

Note. A total of 80 first-cycle codes were identified in the journal articles included in this systematic literature review.

CHAPTER III

POLITICAL, DEMOGRAPHIC, AND ECONOMIC EFFECTS ON STATE-LEVEL COMMUNITY COLLEGE APPROPRIATIONS

This dissertation follows the style and format of *Research in the Schools (RITS)*.

Abstract

This study comprised a multiple regression analysis that was conducted to observe possible relationships between changes in community college appropriations at the state level and political associations, demographic changes, and economic factors. Data were collected from the National Center for Education Statistics of the U.S. Department of Education, the National Conference of State Legislatures archives, the Bureau of Economic Analysis of the U.S. Department of Commerce, and the U.S. Census Bureau. The results of this study indicated that changes in state community college appropriations amounts were affected more by economic factors than they were affected by political associations or population growth.

Keywords: State community college appropriations; State legislatures; Partisan politics

POLITICAL, DEMOGRAPHIC, AND ECONOMIC EFFECTS ON STATE-LEVEL COMMUNITY COLLEGE APPROPRIATIONS

Public community colleges have experienced declining resources due to decreasing state higher education appropriations across the United States since the 1980s while the environments in which they operate present increasing challenges and demands for accountability (Salinas & Friedel, 2016; St. John & Paulsen, 2001; Tandberg, 2010; Torraco & Hamilton, 2016; Trammell, 2005; Voorhees, 2001, Zumeta, 2005). Decreases in state community college funding present risks of setbacks for students who rely on programs vulnerable to funding reductions (e.g., academic support programs, vocational-technical programs, etc.) as many state-level policymakers continue to allow tuition increases to supplant revenue shortfalls (Kennamer, Katsinas, Hardy, & Roessler, 2009; Torraco & Hamilton, 2016; Voorhees, 2001). The processes and sources of public funding for community colleges continue to be stirred by political, demographic, and economic factors (Dar, 2012; Dar & Lee, 2014; Humphreys, 2000; McLendon, Deaton, & Hearn, 2007; Ness & Tandberg, 2013; Trostel & Ronca, 2009).

Community colleges are adapting to increasingly complex demands for education while drawing less of their operating funds from state appropriations (Torraco & Hamilton, 2016; Voorhees, 2001). Federal funding has not compensated for the decline in state appropriations as federal higher education appropriations have dwindled since the mid to late-1900s (Lasher & Greene, 2001; Mumper, 2001; Paulsen, 2001a; Tandberg, 2010; Toutkoushian, 2001). Local funding has also been inadequate as community college districts cannot raise revenue from property taxes sufficient to offset the shortfalls from state and federal cutbacks (Lasher & Greene, 2001). Despite relevant challenges in

federal and local sources of income, state-level community college appropriations will be the focus of this study as the largest proportion of public funding for community colleges is granted by state governments (Archibald & Feldman, 2006).

State community college appropriations have not grown at rates that are adequate to offset increasing public demands and steady enrollment growth since 2000 (American Association of Community Colleges, 2013; Grapevine, 2016; State Higher Education Executive Officers Association, 2016; Tandberg, 2010; Torraco & Hamilton, 2016). Although total state appropriations for all higher education institutions among the 50 states grew by 18.5% from 2003 to 2011, enrollments across all U.S. 2-year public community colleges increased by 21% (American Association of Community Colleges, 2013; State Higher Education Executive Officers Association, 2016). Community Colleges in New Jersey, which were founded on the principle of equal funding (33%) from the state, local counties, and tuition, lost 15% in state appropriations since 2000, with 18% of operating expenses now coming from the state (Friedel, Killacky, Miller, & Katsinas, 2014). Expenditures per full-time equivalent (FTE) community college student by the North Carolina General Assembly declined by 20% from 2008 to 2014 (Friedel, Killacky, Miller, & Katsinas, 2014). The Colorado General Assembly reduced appropriations for the Colorado Community College System by 21% between 2008 and 2012 (Friedel, Killacky, Miller, & Katsinas, 2014). State appropriations, which previously funded 73% of the Louisiana Community and Technical College System's operating budget, fell by 47% in 2012 and subsequently comprised only 53% of the system's operating budget (Friedel, Killacky, Miller, & Katsinas, 2014).

The problem of uncertainty in the process of state college appropriations has long been a determiner of the fate of vulnerable members of the community who seek to improve their life experiences through the pursuit of postsecondary education. Fletcher and Friedel (2017) postulated that there is no uniform type of community college governance structure at the state level across the 50 states. As such, it is in the interest of all stakeholders in community colleges to understand better the factors that contribute to levels of relative stability in how the institutions are funded by their state governments. Whereas state higher education appropriations processes were clearly affected by elements such as politics and economics, further investigation into which elements contribute to fluctuations in state spending was needed to foresee better nascent changes in state funding specific to community colleges.

The purpose of this study was to construct a predictive model in which fluctuations in the amounts in community college appropriations (i.e., increases or decreases from the previous years) among 48 of the 50 states (Alaska and Nebraska were excluded) were determined via changes in selected political environments, population densities, and economic circumstances. Evidence-based forecasting of whether a state will increase its expenditures on community colleges was attempted through the determination of the effect sizes of the relationships between state political, demographic, and economic factors and state appropriations awarded to community colleges. Relationships between state community college appropriations and several political, demographic, and economic variables was explored among the United States for the years from 2010 to 2014. Results were analyzed to further understanding of the college funding cycles in the United States as well as to anticipate increases or decreases in

community college appropriations awarded by state governments. This study was conducted with the intention of providing information to policymakers, administrators, and educators regarding the state community college appropriations processes for the institutions in which they are vested. Additionally, the public might benefit from a deeper understanding of the complexities of the community college appropriations processes of the state legislatures accountable to it, which could be enhanced through the results of this investigation.

Review of the Related Literature

Multiple factors have been reported to help ascertain how state legislatures determine appropriation amounts for their constituent community colleges. State community college funding—although a separate line item from higher education appropriations in several state budgets—is affected by many of the same factors that affect state higher education funding. Researchers of higher education finance argued that political environments, such as state governments with certain shares of control held by political parties and interest groups that may seek to decrease higher education funding, affect levels of state higher education appropriations (Doyle, 2012; Lasher & Greene, 2001; Ness & Tandberg, 2013; Tandberg, 2013, Weerts & Ronca, 2012). Additionally, demographic changes (e.g., population increases/decreases) and economic factors (e.g., increases/decreases in per capita income and state tax revenue) have affected state higher education appropriations (Doyle, 2012; Lasher & Greene, 2001; Weerts & Ronca, 2012). These factors are discussed in the context of the characteristics of state legislatures (i.e., size and balance of power) and the external pressures on state appropriations processes (e.g., economy, funding revenue sources, interest groups).

Legislative Characteristics

Legislator term limits. Term limits have been shown to effect spending by state legislatures (Asako, Matsubayashi, & Ueda, 2016). Asako et al. (2016) postulated that the skills and political views of lawmakers evolve as they are reelected and gain seniority (Asako et al., 2016). In contrast to the notion that state spending is reduced by the adoption of term limits because of the resulting limitations on seniority, Asako et al. (2016) theorized that term limits reduce state spending because term limits affect the ways lawmakers bargain over distributive benefits. The authors concluded that stricter term limits equated to increased state spending because the legislature consisted of lawmakers with similar levels of authority (Asako et al., 2016). Asako et al. (2016) further suggested that the variance across levels of seniority within legislatures (i.e., freshman, junior, senior) played a more important role in determining state spending levels than the average level of seniority.

Size of legislatures. The relative number of constituent districts that constitute a legislative body frequently accompanies factors like term limits in relation to levels of state spending (Asako et al., 2016) in affecting legislative spending (Bradbury & Cain, 2001). Bradbury and Cain (2001) tested the "Law of 1/*n*," developed by Weingast et al. (1981), in which it is posited that increases in numbers of districts and elected representatives affect increases in government spending. Bradbury and Cain (2001) revealed that the Law of 1/*n* was developed within a context of unicameral legislatures. Accordingly, the authors extended the traditional model of the Law of 1/*n* to encompass bicameral legislatures by incorporating asymmetry in power of legislative chambers (Bradbury & Cain, 2001). The results from their research suggested that a 1% increase in

the size of the lower chamber lead to an increase in government expenditures of between 0.24% and 0.35% and that 1% increase in the size of the upper chamber lead to decrease in government expenditures of between 0.05% and 0.1%.

Population density. Population densities have been shown to affect spending by state legislatures along with the factors of legislative size, structure, and political orientation (Asako et al., 2016; Bradbury & Cain, 2001; Glenn, 2006; Pettersson-Lidbom, 2011). Pettersson-Lidbom (2011) analyzed data on Finnish and Swedish local governments via regression-discontinuity and fixed-regression approaches, in which the size of government was predicted by size of council, size of population, fixed-municipality effect, and year-fixed effect. Pettersson-Lidbom (2011) revealed a negative relationship between the size of legislatures and the size of government, or governmental spending, which was contrary to conventional wisdom that larger legislatures resulted in more governmental spending.

Efficiency of legislation. Legislative bodies that produce more legislation could be more likely to fluctuate in their amounts of spending. Hicks (2015) examined whether partisan competition detracts from the efficiency of state legislatures in processing their respective volumes of legislation. Hicks (2015) observed 48 state legislatures over a 19-year period (1991-2009) and demonstrated that legislative efficiency reduces under conditions that foster minority party obstruction. *Legislative efficiency*, is defined as the number of enactments of a legislature in each year, was explored relative to partisan seat margin, polarization, divided government, term limits, legislative professionalism, and states' electoral competitiveness.

Results revealed that small partisan margins, indicating larger minority parties,

reduced legislative efficiencies if parties were polarized. Further, small partisan margins reduced legislative efficiencies if governments were divided (e.g., executive and each legislative branch of a state government were not under uniform political party control). Connecting to the findings presented by Asako et al. (2016) on legislative term limits and spending, Hicks (2015) additionally revealed that legislatures with imposed or adopted term limits enacted an average of 62.1% more bills than legislatures without term limits and that legislatures enacted 14.8% more bills per year for each 1 million-person increase in the population that the legislatures represent.

State-level community college governance. The structures of community college governance at the state-level may be related to the same factors that affect state funding for those institutions. Fletcher and Friedel (2017) revealed that 12 state governments changed their state-level community college governance structures from 2014 to 2016 and that eight states were making serious attempts to change their community college governance structures as of 2017. The authors categorized state-level community college governance structures as of 2015 in a five-category taxonomy that was originally introduced by Katsinas (1996). The authors cited legislative politics and economic needs among the top drivers of change among state-level community college governance structures (Fletcher & Friedel, 2017).

External Pressures on State Appropriations Processes

Economy. Economic factors directly affect state-level higher education appropriations processes (e.g., community college funding) in the United States (Doyle, 2012; Humphreys, 2000; Weerts & Ronca, 2012). Doyle (2012) revealed that economic factors played the most profound role in changes to higher education appropriations

within states, even over the political characteristics of the state (Doyle, 2012). Further, Doyle (2012) revealed no statistically significant relationship between liberal ideology and levels of state financial aid.

Business cycles also affect changes in levels of state higher education appropriations (Humphreys, 2000). Accordingly, Humphreys (2000) analyzed the relationship between government higher education appropriations and the business cycle through the implementation of an econometric model, which was centered on total state personal income. Humphreys (2000) revealed that a 1% decline in real per capita income was associated with an average 1.39% decrease in state higher education appropriations per student in the subsequent year. Torraco and Hamilton (2016) asserted that personal income levels of families have fallen for several years in a row as community colleges continue to be faced with increasing costs, stricter admissions requirements, and growing demands for workforce training.

Political effects on state spending on single line items. Individual line items are beholden to general legislative spending (Noonan, 2015). Noonan (2015) postulated that funding for arts programs is a barometer for overall public funding. The researcher incorporated an earlier model (Noonan, 2007) to conduct an analysis of state fiscal conditions, state socioeconomic measures, and political composition to determine variation in state arts agencies funding (Noonan, 2007). Noonan (2015) revealed that political party shifts did not seem to affect state arts agencies funding; however, active electorates (i.e., battleground states and increased campaign expenditures) tended to reduce state arts agencies funding.

Dar and Lee (2014) investigated the effects of partisanship on higher education

expenditures. The authors revealed that larger Democratic margins affected general higher education spending. However, Dar and Lee (2014) demonstrated that the effect of Democratic margins on higher education spending was reduced by unemployment and high levels of polarization.

Capital spending versus general fund spending for higher education. Capital outlays (i.e., the construction of new college facilities) are a major expense for state legislatures (Ness & Tandberg, 2013). As such, they should be separated from general fund higher education spending when possible in the observance state community college spending. Ness and Tandberg (2013) demonstrated that capital spending for higher education represented the clear majority of all state capital projects because Grades K-12 school construction is mainly funded at the local level. The authors revealed three notable observations: (a) the budget powers of governors had a positive and significant effect on general fund expenditures but had negative and significant effects on capital expenditures; (b) political ideology had no significant effect on general fund expenditures but did have a positive and significant effect on capital expenditures; and (c) state Medicaid expenditures were negatively and significantly correlated to general fund expenditures but not to capital expenditures.

Whereas researchers have offered insight to the relationships between political, demographic, and economic factors and higher education, there is a dearth of research on the effects of the previously mentioned factors on community college appropriations. Only one study by Weerts and Ronca (2012) was found to have explored differences in higher education expenditures. This research revealed that state financial support was shaped by state context, institutional mission (e.g., Carnegie class), and percentage

changes in public support for higher education (Weerts & Ronca, 2012). Although Weerts and Ronca (2012) offered an exemplar model for identifying sources of fluctuations in states' higher education expenditures in terms of all categories of institutions, more research is needed of how state expenditures exclusively for community colleges, and not for all higher education institutions, are affected by political, demographic, and economic elements.

The model presented in this dissertation was based on hypotheses gathered from the related literature and will test the dependent variable of state community college appropriations segregated from overall higher education appropriations. Several hypotheses emerge from the review of the related literature in this study: (a) states with smaller amounts of legislators will spend more on community colleges; (b) lower chamber partisan majorities are determinants of states' likelihood to spend on community colleges; (c) states with population increases are more likely to expend resources on community colleges; (d) state income is a determinant of state spending on community colleges; and (e) state-level per capita income is a determinant of state spending on community colleges. Consequently, each of the hypotheses were tested as determinants of whether state legislative bodies increase or decrease appropriations to community colleges as the predictive model presented in this study.

Research Questions

The following research questions were addressed in this study: (a) What political affiliations, population trends, and economic factors predict the likelihood of state governments' increases or decreases in appropriations granted to community colleges?; and (b) Of these items, which are the best predictors of changes in state appropriations?

The research questions addressed the legislative cycles over a 4-year period, from 2010-2014. Each year was examined within the model to determine accuracy and to identify any trends among the variables over time.

Method

Research Design

A nonexperimental causal comparative research design was utilized in this investigation (Johnson & Christensen, 2014). Johnson and Christensen (2014) defined the causal-comparative approach as "a form of nonexperimental research in which the primary independent variable of interest is a categorical variable" (p. 44). Accordingly, neither the dependent variable nor the independent variables examined in this investigation were manipulated.

Measures

Data representing the dependent variable (i.e., state appropriations awarded to community colleges) were downloaded from the U.S. Department of Education, National Center for Education Statistics. The researcher limited the number of independent variables to total of five to maintain an appropriate ratio of variables to cases. Archival data representing the political characteristics of the states and structures of their legislatures (i.e., size of legislature and partisan proportions) were collected from the National Conference of State Legislatures archives. Archival data representing additional demographic characteristics of the states (i.e., changes in state population sizes) were downloaded from the Historical Data section of the U.S. Census Bureau website. Economic archival data (i.e., state tax collections and household per capita income) were

retrieved from the U.S. Department of Commerce, Bureau of Economic Analysis website.

Sample. State-level data for 48 states between 2010 and 2014 served as the basis for investigation in this study. The state of Alaska was excluded because the five community colleges in Alaska are either funded as part of the University of Alaska Anchorage or are controlled by the North Slope Borough (Iḷisaġvik College), and therefore, data on state appropriations awarded directly to these institutions were not available for the years observed in this study. Nebraska was excluded because of its unicameral nonpartisan legislature.

Dependent variable. The dependent variable was the percentage change in appropriations for community colleges per state. State appropriations were defined as funds granted by state legislatures to their constituent 2-year postsecondary institutions, including community colleges and technical institutes, for each fiscal year. Weerts and Ronca (2012) demonstrated that the observation of percentage increases in state higher education appropriations was more accurate than observing actual dollar amounts. State appropriations data for community colleges for each of the 48 states were downloaded from the U.S. Department of Education, National Center for Education Statistics database for each year from 2010 to 2014.

Although South Dakota does not have 2-year postsecondary institutions labeled as "community colleges," state appropriations awarded to its regionally accredited technical institutes (public associate's colleges) were included because these institutions offered credit-level general education courses and associate's degrees comparable to community colleges in other states.

Independent variables. Five independent variables formed the construct of political, demographic, and economic factors used to determine changes in state community college appropriations: (a) *legislature size*, (b) *partisan margins*, (c) *changes in state population*, (d) *state tax revenue*, and (e) *state per capita income*.

Legislature size. The respective size of each state legislature was an independent variable in this dissertation. Legislature size was defined as the total number of representative districts in that state's government. The researcher collected data for the sizes of each state legislature for each year from 2010 to 2014 from the National Conference of State Legislatures archives.

Partisan margins. Legislative partisan margins for each state government's lower chamber was an independent variable in this dissertation. Lower-chamber legislative partisan margin was defined as the respective difference in legislative seats held by the majority party compared to the minority party in the lower chamber of each state legislature. The lower chambers of the state legislatures were selected for observation in this study over the upper chambers because they often have more frequent election cycles and are therefore better suited for analysis in terms of accuracy related to electoral trends and turnover in party control. The state of Nebraska has a unicameral legislature that will be used as the lower legislative chamber for that state in this study. The researcher collected data for lower-chamber legislative partisan margins for each year from 2010 to 2014 from the National Conference of State Legislatures archives. These data were presented in percentages of lower-chamber legislative seats occupied by lawmakers identified as Democrats. Positive percentages indicated a majority for the Democratic Party. Negative percentages indicated a majority for the Republican Party.

Changes in state population. The populations for each state was an independent variable in this study. The data for each year from 2010 to 2014 were collected from the Historical Data section of the U.S. Census Bureau website. The data were converted to percentages of change from previous year by the researcher prior to analysis.

State tax revenue. Revenue from tax levies for each state was an independent variable in this study and the data for each year from 2010 to 2014 were taken from the U.S. Department of Commerce, Bureau of Economic Analysis website. Prior to analysis, the data were converted to percentages of change from previous years by the researcher.

State per capita income. Per capita household income for each state was an independent variable in this study and the data, presented in dollar amounts, for each year from 2010 to 2014 were obtained from the U.S. Department of Commerce, Bureau of Economic Analysis website. Prior to analysis, the researcher converted the data to percentages of change from previous years for each year observed. Descriptive statistics of each variable for the years 2010 through 2014 are illustrated in Table 3.1.

Insert Table 3.1 about here

Procedure

The relationships between the state community college appropriations awarded by each state government and the selected political, demographic, and economic factors of each state were examined using a multiple regression analysis. This analysis was completed for each year from 2010 through 2014. The time period between 2010 and 2014 was selected for examination for three reasons. First, the researcher examined

possible political, demographic, and economic phenomena that may have shifted or trended from year to year. Second, the 2010 state elections resulted in sizeable increases for Republicans in statewide elections across most states, which brought about an era of ideologically conservative majorities across many states through 2014.

Prevalent themes often at the center of conservative political campaign rhetoric have traditionally been austerity and reductions in "wasteful" spending in areas such as education (Arbour, 2014; Burden & Sandberg, 2003). Respectively, several Republican politicians won state-level elections in 2010 through strategies based on campaign promises to cut state spending levels (Brady, Fiorina, & Rivers, 2011; Gamkhar & Pickerill, 2011). Examining state spending before and after the effects of the 2010 elections presented the opportunity to observe the effects of growing legislative Republican caucuses and to determine partisan effects on higher education spending. Third, state community college appropriations data from all of the 48 states observed were not available from state agencies past 2014 at the time this study was conducted.

The researcher assessed the predictability of each independent variable using guidance discussed in Courville and Thompson (2001) and in Kraha et al. (2012). This included the use of standardized beta coefficients which were used to rank the predictive contribution of each independent variable to the dependent variable (Meyers et al., 2013; Pedhazur, 1982, 1997; Pedhazur & Schmelkin, 1991). Structure coefficients were also used to interpret variable importance. Structure coefficients are measurements between observed independent variables and predicted dependent variable scores (Field, 2013; Kraha et al., 2012; Meyers et al., 2013). When squared, these coefficients can inform the percent of the effect size that can be explained by each independent variable by itself.

Assumptions of multiple regression were examined prior to interpretation of results. There were no violations to these assumptions.

Results

Separate regression analyses were conducted for each fiscal year observed in this study (2010 – 2014). The overall model was not statistically significant for FY 2010, $F(5, 42) = .026$, $p = .283$, $R^2 = .134$; FY 2011, $F(5, 42) = .020$, $p = .856$, $R^2 = .044$; FY 2012, $F(5, 42) = 31.505$, $p = .611$, $R^2 = .079$; and FY 2014, $F(5, 42) = .041$, $p = .145$, $R^2 = .172$. The only year in which changes in community college appropriations could be predicted was in FY 2013, $F(5, 42) = 1.247$, $p = .031$, $R^2 = .246$ The results for each model for the years 2010 through 2015 are illustrated in Table 3.2.

Insert Table 3.2 about here

Because the model was statistically significant for FY 2013, beta weights and structure coefficients were examined to further explore which variables contributed most to the prediction of the changes in state appropriations awarded to community colleges. With respect to the standardized beta coefficients for the group of political, demographic, and economic variables, the values ranged from a low of -.395 to a high of .406. Per capita income and taxes were found the be the best predictors of changes in state community college appropriates based on beta weights.

There was a positive relationship between per capita income and changes in state community college appropriations. This variable was positively related to changes in state community college appropriations and explained 44.3% of the *R*-squared effect size

for the model in FY 2013 (r_s^2 = .443). Additionally, there was a negative relationship between changes in state taxes collected and changes in state community college appropriations. This variable explained 1.1% of the *R*-squared effect size for the model in FY 2013 (r_s^2 = .011).

Discussion

The results of this study indicated four concluding points. First, state legislatures allocated funds to community colleges at reasonably consistent levels from 2010 through 2014. Consistent levels of state funding allocations for community colleges across a 5-year timeframe stands in contrast with previous research on state community college funding (Salinas & Friedel, 2016; St. John & Paulsen, 2001; Tandberg, 2010; Torraco & Hamilton, 2016; Trammell, 2005; Voorhees, 2001, Zumeta, 2005).

Second, changes in state community college funding levels across the United States are more complex than can be predicted by a few factors. Predictability of changes in state community college appropriations may be better explained by different groupings of predictive variables that reflect the intricacies of each state, such as models that take into account various unique attributes of individual state economies (e.g., amounts of growth in primary economic sectors of states). Third, state per capita income and state revenue did not emerge as factors that were related to changes in state community college funding. Although financial inputs to the states and citizens were linked to changes in community college appropriations for 2013, the connection was not consistent across all years, which reinforced the first key finding that state community college funding itself was consistent. Thus, the minimal variability in changes to appropriations likely affected the ability to detect differences, yet it reflected stable levels of appropriations.

Fourth, partisan politics had no identifiable effect on changes in state community college appropriations, despite previous expectations (Dar & Lee, 2014). These results were in accordance with the results presented in Noonan (2015), in which partisan shifts did not seem to affect the observed individual line-item of state arts agencies funding. Furthermore, the fourth key finding of this study was in contrast to the notion that higher Democratic margins in state legislatures indicated increased levels of state funding for overall higher education presented by Dar and Lee (2014).

Statistically significant relationships were observed for state tax revenue and state per capita income for FY 2013. However, neither legislature size nor partisan proportions of lower state chambers were statistically significant predictors of changes in state community college appropriations for FY 2013. There were no statistically significant relationships between changes in population from 2012 to 2013 and changes in state community college appropriations from 2012 to 2013. None of the other years observed in this study (2010, 2011, 2012, and 2014) entailed relationships between the dependent variable and the independent variables. Furthermore, effect sizes were small for the analyses of these years, based on the observed *R*-squared values (Cohen, 1988). Whereas, the per capita subscale had the most predictive effect on state community college funding for 2013 as demonstrated by its higher beta weight and squared structure coefficient, the predictability of state community colleges may be more complicated as the results of the predictive model employed in this study did not yield consistent results across the years observed.

Economic variables had the most predictive value in terms of increases and decreases in state community college appropriations of the selected political associations,

population changes, and economic factors selected for observation in this study. Political factors appeared to be less connected to the amounts of appropriations awarded by the states to institutions than expected as partisan composures of state legislatures were not found to have statistically significant effects on changes in state community college appropriations. This finding stood in contrast to the findings of McLendon, Deaton, and Hearn (2007), in which support was demonstrated for the notion that higher education reform was driven more by changes in the political landscapes than it was by state economic or demographic changes. The model employed in this study revealed that economic factors could be a predictor of whether a state government is likely to increase or decrease its appropriations awarded to community colleges.

Neither legislature size nor partisan proportions of lower state chambers were statistically significant predictors of changes in state community college appropriations for any of the years observed in this study. This finding stood in contrast to the notion that overall state higher education spending is beholden to political factors including numbers of legislative districts and party control of legislatures (Asako et al., 2016; Bradbury & Cain, 2001; Dar & Lee, 2014; McLendon, Deaton, & Hearn, 2007; Noonan, 2015). Furthermore, there were no statistically significant relationships between changes in population from the previous year and changes in state community college appropriations from the previous year for any of the years observed. This finding stood in contrast with the notion that population fluctuations affect spending on legislative line-items (Asako et al., 2016; Bradbury & Cain, 2001; Glenn, 2006; Pettersson-Lidbom, 2011). However, the positive relationship between changes in per capita income and the dependent variable coupled with the negative relationship between changes in amounts of

taxes collected represented the notion that economic factors have a stronger effect on the amounts of funding that state legislatures allocate to their constituent community colleges.

Both independent variables (i.e., changes per capita income and changes in amounts of taxes collected) appeared to be comparable in terms of importance based on the model coefficients, which indicated a clear connection between state revenue and spending on community colleges at one point in time. This finding reinforced the notion that economic factors are the primary determinants of state spending on items such as higher education (Doyle, 2012; Humphreys, 2000; Weerts & Ronca, 2012). Furthermore, the negative relationship between changes in state tax revenues collected and changes in state community college appropriations could indicate that states are more susceptible to cutting community college funding when revenues decrease but that they are not necessarily as susceptible to raising funding amounts when revenues increase (Delaney & Doyle, 2013). Thus, when revenues increase, state spending on community colleges might remain flat despite that higher education funding is often increased when state revenues grow (Delaney & Doyle, 2013). Perhaps of equal importance was that the model did not uncover statistically significant relationships between the predictor variables and changes in state community college appropriations for four of the five observed years in this study. Therefore, the results of this study may be difficult to generalize across all state governments in their funding of community colleges.

Comparisons in the Context of the Broader Literature

The results of this study depicted predictions of state appropriations that were comparable to other studies with variables previously not explored in a context exclusive

to community colleges. As such, future models should include distinctions between community colleges and other institutions of higher education in order to reveal the effects of state policies specifically on community colleges. Although there is a scarcity of studies directly related to predictors of state community college appropriations in the available current research literature, several studies offered a context within which the magnitude of findings in this study could be compared. The *R*-squared value ($R^2 = .246$) for FY 2013 was within the parameters set by several other articles, including Delaney (2011); Hillman, Tandberg, and Gross (2014); Humphreys (2000); and Hillman, Tandberg, and Fryar (2015).

Delaney (2011) revealed a relationship between federal earmarks and state higher education appropriations, reporting *R*-squared values ranging from .138 to .931. Whereas the model presented by Delaney (2011) included the independent variables of state revenue and state per capita income, the higher *R*-squared value presented in the study could be attributed to the model's inclusiveness of federal higher education appropriations as well as public and private 4-year institutions. Federal appropriations, 4-year institutions, and private institutions were excluded from this study because the focus was to determine factors that affected public community college appropriations within states.

The large effect size in the study could also be attributed to the inclusion of voter participation rates in presidential elections as well as to the exclusion of any measures of partisan political associations. Conversely, partisan associations were observed in this study and voter participation rates were excluded. No statistically significant relationships between partisan political associations and the dependent variable were

observed in this study. The inclusion of partisan political measures in this study may have lowered the observed effect sizes of the detected statistically significant relationships in terms of both changes in state tax revenues and changes in state per capita income for FY2013 because there were no statistically significant *p*-values for the *Partisan Margin* independent variable for any of the years observed. Consequently, if the political and demographic independent variables had been omitted from the independent variables in this study, stronger relationships might have been detected between the dependent variable and a construct of exclusively economic variables because a larger share of the construct would include independent variables with statistically significant relationships with the dependent.

Hillman et al. (2014) constructed a difference-in-difference regression model to observe the cost effectiveness of state higher education appropriations disbursed directly to students. The authors reported *R*-squared sizes ranging from .137 to .989 in their findings of the effects of Colorado's voucher model for higher education on college access (Hillman et al., 2014). Although the results in Hillman et al. (2014) comparatively have more predictability than this study, they are less generalizable. The relatively large effect size in the model presented by Hillman et al. (2014) might be explained by the relatively narrow focus on appropriations issued by a single state (Colorado) directly within the model as well as by the observation of appropriations awarded directly to students instead of institutions, effectively bypassing performance-based institutional measures. Humphreys (2000) conducted regression analyses to investigate the effects of business cycles on higher education appropriations, in which *R*-squared values ranging from .19 to .82 were reported. The large effect sizes revealed in the study conducted by

Humphreys (2000) could be explained by the comparatively narrow focus on per capita income growth as a measure of a comparatively broad dependent variable state higher education that was inclusive of funds awarded to 4-year institutions.

Limitations and Future Research

An enhanced understanding of the relationship between state community college appropriations and the political, demographic, and economic characteristics of 48 of the 50 states from 2010 to 2014 was facilitated through multiple regression analyses in this study. An important limitation of this investigation was that differences in the individual formula funding models of each state (e.g., differences in ratios of funding to contact hours) were not accounted for in this study, as the various states use their own unique formula funding models (Humphreys, 2000; McKeown, 1996). An additional limitation of this investigation was that Alaska, the District of Columbia, and the United States territories (e.g., Puerto Rico, Guam,) were excluded because they did not have state legislatures that determined appropriations for their community colleges. Nebraska was excluded because of its nonpartisan, unicameral legislature. However, these limitations were minimal because it is unlikely that the addition of the aforementioned territories would have substantially changed the results of this study due to their comparatively small population sizes. A final limitation of this study was that several years were excluded from the observation. A broader range of observed years might reveal patterns in state community college appropriations that were not captured in this study.

Whereas, some predictive values were established in this study between political, demographic, and economic factors and state community college appropriations, more research is needed to form a reliable predictive model. As the findings in this study

revealed a slight drop in state community college appropriations from 2009 to 2010 followed by a steady increase in appropriations from 2010 through 2014, states may be attempting to neutralize the losses from higher education funding cuts that institutions have experienced since the 1980s as revealed in the studies presented by researchers that include Kennamer, et al. (2009), St. John and Paulsen (2001), Tandberg (2010), Torraco and Hamilton (2016), Trammell (2005), Voorhees (2001), and Zumeta (2005).

Suggestions for further research include similar studies that take into account a wider range of years observed, the inclusion of shifts in community college enrollments per state, and the inclusion of line items in state budgets that might compete with community colleges for funding, such as universities, prisons, Medicaid, and hospitals. The recent period of relative stability in state community college appropriations (2010 – 2014) in the greater context of systematic appropriations declines over the last several decades could be accounted for through such a study. An additional suggestion for future research is a study that includes a greater measure of electorate activity, per Noonan's (2015) findings, which may contribute to the understanding of fluctuations in community college appropriations by state governments. A final recommendation for future research is a study in which the effects of public funding, including state appropriations along with federal and local funding, on the outputs of community colleges is observed.

Conclusion

Two of the five hypotheses addressed in this study were supported by the results of the employed regression analyses. First, the hypothesis that state income is a determinant of state spending on community colleges was verified for 2013. Second, the hypothesis that state-level per capita income is a determinant of state spending on

community colleges was also verified for 2013. Although these two hypotheses were not verified for each of the years observed in this study, the relationships between the selected factors and state community college appropriations for the years observed are relevant because they enhance understanding of how state community college appropriations are determined in light of the economic circumstances that affect state governments.

Implications of the results of this study for researchers are that the predictability of state funding amounts for community colleges is not uniform across the United States. Each state has its own unique set of circumstances and determinants of whether its legislature will increase or decrease funding for community colleges. However, the effects of individual citizen income and state revenue on a state's likelihood to increase or decrease community college appropriations was demonstrated in this study. Implications for policymakers are that partisan politics have not recently affected changes in state community college funding and that the stability in funding may reflect a political caveat to lawmakers against attempts to defund community colleges as legislators who support drastic cuts to community college funding would likely be perceived as operating outside of the political norm.

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Table 3.1

Descriptive Statistics of Variables

Variable	2010		2011		2012		2013		2014	
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
DV – Change State App.	-.056	.144	.035	.221	.920	6.511	.117	.734	.071	.159
IV1 - Leg. Size	151.521	58.222	151.521	58.222	151.521	58.222	151.542	58.244	151.542	.178
IV2 - Part. Margin	.554	.151	.467	.169	.462	.168	.475	.179	.472	.178
IV3 - Change State Pop.	.008	.005	.006	.004	.007	.005	.007	.006	.006	.006
IV4 - Change State Tax Rev.	-.021	.057	.073	.036	.061	.066	.054	.048	.019	.034
IV5 - Change Per Capita Income	.022	.017	.054	.018	.042	.024	.004	.013	.041	.010

Note. The total number of units measured was 48 state governments.

Table 3.2

Standardized Beta Coefficients, p-values Associated with Regression Coefficient, and Squared Structure Coefficients for Regressions with Changes in State Community College Appropriations as Dependent Variable

	2010			2011			2012			2013			2014		
IV	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2
Leg. Size	-.037	.810	.000	-.058	.726	.173	-.068	.664	.000	.243	.123	.011	-.052	.725	.007
Part. Mar.	-.232	.160	.013	-.030	.868	.052	-.149	.362	.019	-.020	.897	.103	.137	.352	.093
Chg. Pop.	-.240	.174	.315	.194	.249	.894	-.346	.076	.498	.363	.106	.046	.148	.364	.156
Chg. Tax Rev.	.294	.076	.000	-.009	.959	.014	.204	.294	.047	**-.395**	.050	.011	.368	.025	.708
Chg. Per Cap. Inc.	-.067	.674	.006	-.059	.754	.000	.004	.982	.003	**.406**	.005	.443	-.110	.494	.104
R^2		.134			.044			.079			.246			.172	
Sig.		.283			.856			.611			.031			.145	
F		1.299			.385			.721			2.746			1.749	

Note. The total number of units measured was 48 state governments. Beta coefficients marked in bold font had *p*-values that were statistically significant at the 0.05 level (2-tailed).

CHAPTER IV

THE EFFECTS OF FLUCTUATIONS IN PUBLIC SUBSIDIES ON TEXAS COMMUNITY COLLEGES

This dissertation follows the style and format of *Research in the Schools (RITS)*.

Abstract

Multiple regression analyses were conducted in this study to observe relationships between public financial inputs and measured outputs of Texas community colleges. Data were collected from Texas Higher Education Coordinating Board databases. The researcher conducted separate multiple regression analyses to observe relationships between sources of public financial input for Texas community college and combined graduation and persistence rates, separated graduation rates, and separated persistence rates. The approach of observing the individual isolated graduation rates and persistence rates, as opposed to the observation of a combined metric, was more effective in uncovering relationships between Texas community college appropriations and outputs.

Keywords: Texas community colleges; Graduation and persistence rates; State appropriations; Federal appropriations; Ad valorem property tax revenue

THE EFFECTS OF FLUCTUATIONS IN PUBLIC SUBSIDIES ON TEXAS COMMUNITY COLLEGES

Community colleges are among the educational institutions that have been deemed vital to the development of fully functioning democratic societies (Dewey, 1916). The primary function of these 2-year postsecondary institutions is to offer cost-effective pathways to completing core curriculum, associate's degrees, and vocational training for students of all backgrounds who seek bachelor's degrees with an emphasis on increasing access to educational opportunities for students from lower income families (Torraco & Hamilton, 2016; Zumeta, 2005). Community colleges and their leaders are heavily subjected to competitive environments driven by sociopolitical forces as they seek to carry out their functions (Blocker, Plummer, & Richardson, 1965; England, 2016). Consequently, these institutions must continue to serve students, many of whom are disadvantaged, amid declining resources to ensure access to postsecondary educational opportunities for all citizens (Torraco & Hamilton, 2016).

In states like Texas, community colleges operate in environments of growing enrollments coupled with continuously changing state-level political contexts and policy agendas despite a history of unified party control (American Association of Community Colleges, 2015; Grapevine, 2016b; Tandberg, 2010; Torraco & Hamilton, 2016). The Texas Legislature passed its first legislation governing junior colleges in 1929 (Friedel, Killacky, Miller, & Katsinas, 2014). Authority over Texas community colleges was transferred from the Texas State Board of Education to the Texas Higher Education Coordinating Board in 1975 by way of legislation after a decade of institutional resistance (Friedel et al., 2014). The Texas Legislature passed legislation in the 1990s

that implemented performance-based accountability reporting requirements for community colleges as well as having added workforce training, adult literacy, and Dual Credit education to their primary institutional functions (Friedel et al., 2014).

Texas entails a traditionalistic-individualistic political culture, which Elazar (1972) defined as being centered on securing existing hierarchical social order combined with a focus on individual economic opportunity. Whereas community colleges provide pathways to individual earning potential and income security (Belfield & Bailey, 2011), Texas legislators acknowledged that they were continuously underfunded and that a review of adequate community college funding was needed by the Texas Legislature (Rangel, 2016). The lack of funding has been demonstrated through the declining the amount of appropriations granted to Texas community colleges by the Texas Legislature over time. The state of Texas reduced higher education appropriations by 18.8% per full-time equivalent student from 2008 to 2015 (State Higher Education Executive Officers Association, 2015). The period from 2008 to 2015 entailed several tumultuous years for Texas community colleges, particularly 2009, in which the state of Texas reduced appropriations for its community colleges by 12.9% from the previous year (Grapevine, 2016a).

Community colleges in Texas need increasing state support considering uncertain economic conditions. Jacobs and Slate (2015) indicated that a national economic recession that began in 2008 and had affected Texas by 2010 as the Texas biennial revenue estimate dropped from $77.1 billion in FY2010-2011 to $72.2 billion in FY2012-2013 (p. 130). The authors stated: “the decline in the Texas biennial revenue estimate [from FY2010-2011 to FY2012-2013] reflected the ailing economy and entailed the

subsequent effects that were projected on Texas community colleges" (Jacobs & Slate, 2015, p. 130).

The largest single share of Texas postsecondary students (47.4%) were enrolled in community colleges as of 2014 (Texas Association of Community Colleges, 2016a). However, enrollments of credit-level community college students, or students who are enrolled in academic classes beyond the developmental level, across Texas declined from 743,252 in 2010 to 712,478 in 2014 (Texas Higher Education Coordinating Board, 2016a), along with total community college contact hours, which dropped from 312,727,979 in 2010 to 302,690,029 in 2014 (Texas Higher Education Coordinating Board, 2010b; Texas Higher Education Coordinating Board, 2014b). Despite enrollment and contact hour declines, operational costs rose from $9.37 per contact hour in 2010 to $11.82 per contact hour in 2014, effectively raising total operational costs for Texas community colleges from $2.5 billion to $2.9 billion (Texas Higher Education Coordinating Board, 2010b; Texas Higher Education Coordinating Board, 2014b). Tuition increases were a common response to increasing operational costs by many of the community colleges across the state as average tuition and fees for in-district Texas community college students increased from $520 in 2010 to $606 in 2014 for 12 credit hours (Texas Association of Community Colleges, 2010c; Texas Association of Community Colleges, 2014).

Although tuition increases compensated for some of the increases operational costs at Texas community colleges, the tuition increases placed greater financial burdens on students and they were not sufficient to make up for the shortfalls at all institutions. Many Texas community colleges have been unable to adapt successfully to the shifting

economic tides across the state as multiple institutions faced subsequent financial strain. In 2013, 11 Texas community colleges had run budget deficits, followed by three in 2014, and seven in 2015 (Texas Higher Education Coordinating Board, 2013; Texas Higher Education Coordinating Board, 2014c; Texas Higher Education Coordinating Board, 2015a). Accordingly, if public community colleges in Texas are to continue to function without increasing costs to students, they must continue to rely on public financing to function in fulfillment of their educational missions of producing highly developed and economically productive graduates.

As public funding for community colleges fluctuates, students are likely affected as reflected by graduation and persistence rates. From 2009 to 2014, total community college appropriations declined in Texas by 1.36% and total federal subsidies for Texas community colleges declined 31% in 2014 (Texas Higher Education Coordinating Board, 2010a; Texas Higher Education Coordinating Board, 2014a). These reductions in public subsidies coincided with a decline in the percentages of first-time, full-time Texas community college students. The number of first-time, full-time students who graduated or were persisting after three years at Texas community colleges declined by 4.1% for credit-level students not requiring developmental education from 2009 to 2014 (National Center for Education Statistics, 2009; National Center for Education Statistics, 2014; Texas Higher Education Coordinating Board, 2015b).

The primary purpose of this study was to ascertain the relationship between fluctuations in public financing on the abilities of Texas community colleges to perform their primary functions of educating students. An important aspect of this study was in its entailed findings that might fulfill the needs of lawmakers and stakeholders in

community colleges to understand better the implications of inadequate state funding for the students they serve. Accordingly, an observation of the relationship between public financial inputs on graduation and persistence rates of Texas community college students was conducted. The public financial inputs of Texas community colleges are three-fold: (a) federal sources of funding, (b) state appropriations, and (c) local ad valorem tax revenue. The measured outputs of Texas community colleges in this study were graduation and persistence, both in combined and in isolated formats. The financial well-being and responsibility of Texas community colleges was observed as an additional independent variable to account for variations in individual levels of institutional effectiveness.

Review of the Related Literature

A review of literature related to the effects of holistic public funding fluctuations (e.g., federal, state, and local) on Texas community colleges uncovered a need for an investigation of how public funding of Texas community colleges affects their measurable outputs. Equitable student access to institutions of learning continues to be a significant issue in public higher education policy (Brown, Butler, & Donahoo, 2005; Darolia, 2013; Nakajima & Nakamura, 2009; Paulsen, 2001c; Thelin, 2004; Wang et al., 2013). Citizens in states with comparatively large community college systems—such as Texas, which comprises 50 community college districts that serve over 1.4 million students—are continually subject to the effects of legislation on their abilities to attain educational experiences as observed through completion and persistence (Texas Association of Community Colleges, 2016a). Community college students are arguably the segment most vulnerable to policy measures that affect access to postsecondary

education of the total postsecondary student population. These institutions serve larger proportions of students from low-income families and developmental students (i.e., students who are at remedial levels of math, reading, and writing) than all other types of higher education institutions. Accordingly, community colleges are sources of socioeconomic opportunity for all individuals, especially for low-income students who are served primarily by these institutions. Therefore, the relationships between public funding for community colleges and their measurable outcomes of graduation rates and persistence rates must be examined to understand better the value of public investment in accessible higher education.

Texas community colleges are funded by federal, state, and local sources in addition to funding received from tuition and fees. The function of Texas community colleges—also a measurable output—is to retain students until they progress to either graduation and/or transfer to four-year institutions, which can be observed in graduation rates and in persistence rates. As such, the graduation rates and persistence rates of Texas community colleges, in combined and in isolated formats, will be discussed in the context of the characteristics of public financial inputs (i.e., federal higher education funding, state higher education funding, and local property tax funding).

Federal funding

Federal higher education subsidies are critical to the operation of Texas community colleges and to educational accessibility for their students (Davidson, 2013). Darolia (2013) demonstrated that a statistically significant relationship existed between levels of accessibility in federal financial aid and postsecondary enrollments. The author investigated the consequences of decreased ability to disburse federal financial aid in

terms of enrollment numbers to demonstrate that declines in federal financial aid negatively impacted enrollments at institutions that offer two-year programs as well as enrollments at for-profit institutions of all varieties (Darolia, 2013). Delaney (2011) uncovered an important connection between state and federal higher education spending. The author displayed positive relationships between institutions having received federal academic earmarks in the prior two years within a state and overall state support for higher education (Delaney, 2011).

State Higher Education Funding

State funding allocated for community colleges. Financial support for community colleges comes from several sources and is closely related to funding for universities. Liefner (2003) conducted in-depth interviews with higher education administrators and professors at institutions of higher education across Europe and drew comparisons to U.S. institutions of higher education to reveal that governments are often pressured to meet public needs while expending minimal resources. Liefner (2003) additionally postulated that the U.S. higher education system is largely market-driven, and that state-oriented systems are often inadequately innovative and insufficiently responsive to changes in public demand.

Political culture. Politics are an important determiner of community college funding. Heck, Lam, and Thomas (2014) postulated that higher education institutions are under increasing pressure to exhibit productivity because of changing state economics, declining public trust, and rising tuition costs. The authors demonstrated how differences between states' political cultures regarding higher education policy choices may help explain differences in institutional productivity among the several states, adding a new

aspect to the discourse on state higher education appropriations (Heck et al., 2014). Elazar (1972) defined *political culture* as the pattern of orientation to political action that includes political structures, electoral behavior, and modes of organization for political action. Heck et al. (2014) revealed that mediating factors between state's economic contexts and higher education support were represented by differences in political culture, which explained graduation rates over time.

Performance-based funding. Performance-based funding is an additional component in the financial inputs of Texas community colleges. Texas is a pioneer among states in terms of setting performance standards that are linked to community college funding, as it was one of the first states to implement an accountability rating standard (Boswell, 2010). Performance funding was legislated as Texas enacted HB 9 in 2011 and SB 1 in 2013, which implemented the state's performance-based funding model for community colleges as of 2016 (National Conference of State Legislatures, 2015).

This performance-based funding model was applied to 10% (less core funding of $1 million per community college district) of total state appropriations for community colleges in Texas (Texas Association of Community Colleges, 2016b). As part of the performance-based funds available to Texas community colleges through the 10% funding model, the Texas Legislature appropriated $172 million in funding for student success initiatives at colleges for 2014 and for 2015 as part of the *Student Success Points* program. The funding of the Student Success Points program is awarded based on the 3-year average of measurable outcomes of completion of remedial math, reading, and writing as well as completion credit hour goals, certificate/degree completion, and successful transfers to 4-year institutions (Texas Association of Community Colleges,

2016b; Texas Association of Community Colleges, 2016c). As of 2016, the model of performance funding for Texas postsecondary institutions entails partial and optional funding for community colleges (Texas Association of Community Colleges, 2016b).

Thornton and Friedel (2016) conducted a qualitative analysis from interviews with community college executives at two Texas community colleges and at two North Carolina community colleges as they investigated the effects of performance-based funding on rural colleges in Texas and North Carolina. The researchers revealed the impacts of performance-based funding policies on rural community colleges were wide, "potentially affecting everything from decision making, to programming, to public perceptions" (Thornton & Friedel, 2016, p. 200). Thornton and Friedel (2016) postulated that the most telling direct impact on the colleges they observed was the expansion of stackable credentials and dual credit offerings, which optimized the colleges' chances of meeting performance-based funding requirements.

Local Property Tax Funding

In addition to funding through tuition, federal appropriations, and state appropriations, Texas community colleges are partially funded through local property taxes via the taxing authority granted to them through their designations as special districts in the Texas Constitution. Waller et al. (2007) examined ad valorem tax rates per $100 valuation, or the amount of property tax charged to property owners per $100 of their properties' total appraised values. The authors measured the tax revenues that result per in-district contact hour for Texas metropolitan and nonmetropolitan public community colleges to demonstrate that there were notable differences in the resulting tax revenues per institution although there were minimal differences in the ad valorem

tax rates per district (Waller et al., 2007). Waller et al. (2007) postulated that institutions and students in nonmetropolitan community college districts experienced increasing tuition rates and fewer resources. The authors argued that the simultaneous increase in tuition and decrease of resources was due to the inferior revenues generated by ad valorem tax rates that are generally the same percentage as metropolitan rates but generate far less revenues in nonmetropolitan districts (Waller et al., 2007).

Measureable Outputs of Texas Community Colleges

Graduation and persistence rates have been used to measure the outcomes of Texas community colleges and may be connected to their function of the legitimation of their students' abilities (Blocker, Plummer, & Richardson, 1965). Spangler and Slate (2015) evaluated the effectiveness of Texas community colleges in serving ethnic minority students by examining the graduation and persistence rates between 2000 to 2010. Results revealed that there has been an overall increase in graduation and persistence rates in Texas community colleges, although the pattern has fluctuated over time (Spangler & Slate, 2015).

Multiple constituencies are affected by changes in state community college funding and policies, the effects of which are far-reaching. Amuedo-Dorantes and Sparber (2014) argued that federal and state policy for undocumented students remained unresolved. The researchers measured the relationship between granting resident tuition subsidies (i.e., in-state tuition rates) for undocumented students and the opportunities for increased college enrollment compared to states that did not offer such rates to undocumented students (Amuedo-Dorantes & Sparber, 2014). Amuedo-Dorantes and Sparber (2014) concluded that undocumented students had significantly lower chances of

educational attainment (e.g., graduation and persistence). The researchers additionally revealed that policies affecting undocumented students' tuition rates could also affect overall enrollment rates as well as graduation and persistence rates (Amuedo-Dorantes & Sparber, 2014). Whereas undocumented students constitute a minority of college-going students in Texas, the observation of the effects of policies on the educational attainment of undocumented students could provide enhanced understanding of the overall relationship between public investment and state-wide graduation and persistence rates.

Community college students are best served by the maintenance of a fine balance between too much and too little funding from public sources (Association for the Study of Higher Education Report, 2007). Whereas, research on performance-based funding was prevalent in the body of community college public finance literature, more research on the effects of fluctuations in state community college appropriations (e.g., core, contact hour, and performance-based) on the graduation and persistence rates of Texas community colleges is needed. Darolia's (2013) study served as justification for the inclusion of federal funding as an additional source of public funding due to the demonstrated effects it had on enrollments at 2-year institutions. The study by Thornton and Friedel (2016) demonstrated the relevance of the relationship between the performance-based component of the state-funding model and varying aspects of community colleges. There may be a relationship between the fluctuations in the state appropriations that constitute the remaining 90% of state funding and graduation and persistence rates if performance-based funding is any indicator. Performance-based funding, which accounts for only 10% of Texas community college state funding, was

shown to have far-reaching effects on rural community colleges (Thornton & Friedel, 2016).

Although this study was centered on the relationships between public funding and the measured outputs of Texas community colleges, internal institutional factors that determine whether a community college receives performance-based funding might be affected by its amount of received contact hour funding. An institution with lower contact hour funding will likely have less resources to optimize the metrics measured through performance-based funding. Conclusively, performance-based funding is an appropriate measure of public funding despite that it is distributed based on individual institutional performance.

The inclusion of performance-based funding in this study was linked to the Student Success Points model of performance-based funding for Texas community colleges as a stream of publicly funded revenue. The Student Success Points model spans the full spectrum of student needs as it includes points awarded for completion of developmental coursework, earning first college credits for English and mathematics, completion of 15- and 30-hour blocks of credit hours, completion of certificates and associate's degrees, and transfers of students to universities after earning 15 credit hours (Texas Association of Community Colleges, 2016c). Whereas Student Success points were not directly observed per community college district in this study, the performance-based funding dollars awarded to each community college district in Texas were included in the measures of state appropriations awarded to each district. Furthermore, ad valorem tax revenues of Texas community colleges were included as a measure of input in this

study to account for the differences in property tax revenues received by the observed institutions (Waller, 2007).

Accordingly, the relationships between public funding and the outcomes of Texas community colleges was examined in this study. Local (e.g., ad valorem property tax revenues), total state appropriations, and federal funding for Texas community colleges were included as measures of input. Because the defined measurable outcomes of Texas community colleges are under review by the state as of 2016 (Spangler & Slate, 2015), the focus of this centered on measuring the relationships between public investment in community colleges and defined output metrics of institutions already identified by the THECB (i.e., graduation and persistence rates).

Research Questions

The central theme of this study was an investigation of the relationships between public investment in Texas community colleges and their production of persisting and graduating students. Respectively, the following two research questions were addressed in this investigation: (a) What are the relationships between public (i.e., federal, state, and local) financial inputs and the outputs of Texas community colleges as measured in graduation and persistence rates?; and (b) Of these inputs, which ones have the greatest effect on the graduation rates and persistence rates of Texas community colleges? All questions were centered on data from the period between 2011 to 2015.

Method

Research Design

A nonexperimental causal comparative research design was utilized in this investigation (Johnson & Christensen, 2014). Johnson and Christensen (2014) defined

the causal-comparative approach as "a form of nonexperimental research in which the primary independent variable of interest is a categorical variable" (p. 44). Accordingly, neither the dependent variable nor the independent variables examined in this investigation were manipulated.

Measures

Data for this study came from the Texas Higher Education Coordinating Board Interactive Accountability System (THECBIA) as well as from the Texas Association of Community Colleges (TACC) database for each year from 2011 through 2015. The following variable data were extracted from the two systems:

Sample. Texas community college districts are categorized as *special districts* under the Texas Constitution and are therefore governmental entities with elected boards of trustees and taxing authority. Each community college district in Texas provides value to the residents of its service area community through offering a combination of academic and vocational educational opportunities. Texas community college districts charge tuition and fees to their students and receive public funding from local property taxes, state appropriations, and federal appropriations as their streams of revenue. The productivity of Texas community colleges can be measured through their graduation and persistence rates as presented by the THECB. The sample in this study comprised all 50 community college districts in Texas. Five Texas community college districts included multiple campuses that were treated as separate colleges within the overall community college system. These *system-districts* include Alamo Community College District, Dallas Community College District, Lone Star College System, San Jacinto College, and

Tarrant County Junior College District. Each of the separate colleges within the system-districts were observed separately in this study, for a total sample of 71 institutions.

Dependent variable. Three models were constructed in this study, each with a different dependent variable, including (a) combined graduation and 3-year persistence rates of Texas community college students not requiring developmental education, (b) graduation rates (non-dev. ed.), and (c) 3-year persistence rates (non-dev. ed.). Whereas it is rare to combine two different rates as a dependent variable, the observation of combined graduation and persistence rates was necessary as an initial measurable annual output of community colleges because not all students graduate every year and students reenrolling until graduation may be considered a successful outcome for a given year.

Combined graduation and persistence rates are defined as the percentages of first-time, full-time undergraduate students who did not require developmental education and who either graduated or are persisting after three years (Texas Higher Education Coordinating Board, 2016b). Spangler and Slate (2015) emphasized the importance of measuring graduation and persistence rates together: "Traditionally, community colleges have used either graduation or persistence rates as a basis for measuring success. Researchers have suggested that only utilizing graduation or persistence rates to measure community college success results in inadequate data" (Spangler & Slate, 2015, p. 744). The data for the graduation and 3-year persistence rates were compiled per each individual Texas community college district and were separated by the THECB into two categories: students who required developmental education and students who did not require developmental education.

Additionally, the data were available as isolated graduation rates, isolated persistence rates, and combined graduation and persistence rates of Texas community colleges. Examinations of the individual isolated graduation rates and persistence rates were conducted for the purposes of a thorough observation of the data and to avoid overlooking relationships that are detectable solely through the combined approach. The researcher collected and examined data for the separated as well as for the combined graduation and persistence rates of Texas community colleges for each year from 2011 to 2015 from the THECBIA database.

Independent Variables. The independent variables represented the construct of *public investment* in this study. The construct of *public investment* comprises the elements of public funding (federal, state, and local) combined with the composite financial index (CFI) rates of Texas community colleges. Conceptually, investment entails a reciprocal relationship between the financier and the recipient of the investment funds, which can be reflected in terms of financial responsibility. The financial responsibility and overall financial well-being of Texas community colleges were accounted for through the observation of their CFI rates. Therefore, the public investment construct includes state appropriations granted to Texas community colleges per full-time student equivalent (FTE), federal appropriations granted to Texas community colleges per FTE, ad valorem property Taxes collected by Texas community colleges per FTE, and the compound financial index rates of Texas community colleges.

State appropriations per full-time equivalent students. Three components constitute state instructional funds for Texas community colleges in addition to the fixed *core funding* of $1 million per community college district; *contact hour funding* at 90%

of total state funding (less core), and *Student Success Point performance-based funding* at up to 10% of total state funding (less core) (Texas Association of Community Colleges, 2016b). The researcher collected data for state instructional funds awarded to Texas community colleges for each year from 2011 to 2015 from the THECB Community College Annual Reporting and Analysis Tool. The data were presented in dollar amounts per full-time equivalent student for each Texas community college district.

Federal appropriations per Texas community college district. Federal community college appropriation amounts were measured through federal restricted grants and contracts awarded to Texas community colleges from 2011 to 2015. Federal restricted grants and contracts are defined as "operating revenue grants or contracts received through federal legislative acts" (Texas Higher Education Coordinating Board, 2012, p. 7). The restricted status of the federal grants and contracts indicated that the funds they entail must be used for specifically defined programs and purposes. The Federal Grant and Cooperative Agreement Act (1977) distinguished between federal contracts and grants. Federal contracts entail funding in exchange for a service to the federal government, whereas federal grants are defined as transferring funds to a recipient to accomplish a public purpose of or stimulation authorized by federal statute (Federal Grant and Cooperative Agreement Act, 1977). Texas community colleges are indirectly subsidized by federal contracts and by federal grants awarded to students authorized under Title IV of the Higher Education Act of 1965. The THECB combines both federal contracts and federal grants into one metric which was used as the measure of federal appropriations per individual institution in this study. These data were obtained for each

year from 2011 to 2015 from the THECBIA database. The data were presented in terms of total federal grants and contracts awarded to each Texas community college.

Total taxes collected per full-time equivalent student. Ad valorem tax revenues of Texas community colleges are defined as funds for the maintenance of district facilities annually levied by each community college board as required by state law (Texas Association of Community Colleges, 2016b). The researcher collected and examined data for total tax revenues received by Texas community colleges for each year from 2011 to 2015 from the THECB Community College Annual Reporting and Analysis Tool. The tax revenue data for Texas community colleges were presented in dollar amounts per full-time equivalent student (FTE) per Texas community college.

Composite Financial Index rates. Composite Financial Index (CFI) rates of Texas community colleges were included in this study to account for variations in financial well-being and responsibility among Texas community college districts. Community college districts with a CFI rate at or above the standard of 2.00 were considered to be in good financial standing, indicating responsible utilization of their publicly funded resources toward supporting student success, and therefore fulfillment their reciprocal obligations to the investing public (Texas Higher Education Coordinating Board, 2016c). CFI rates combine the following measures into one metric: (a) primary reserve ratios, which are comparisons of expendable net positions to total expenses; (b) viability ratios, which are comparisons of expendable net positons to total noncurrent liabilities; (c) returns on net positions, which are measures of changes in net positions from previous fiscal years; and (d) operating margins, which are the operating surpluses or deficits of Texas community colleges per year and include all income (i.e., tuition,

Title IV federal funding, state instructional funds, and property tax revenues) in relation to total operating expenses (i.e., employee salaries, employee benefits, use of facilities, utility expenses, material costs, auxiliary operations, legal expenses, and depreciation of capital) (Texas Higher Education Coordinating Board, 2016b). Due to non-profit nature of state institutions, particularly community colleges, operating margins are held in reserve as contingency funds to be used in subsequent fiscal years. However, many public institutions enjoy varied levels of autonomy in terms of allocating operating margins. The researcher collected data for the CFI rates of Texas community colleges for each year from 2011 to 2015 from the THECB Community College Annual Reporting and Analysis Tool. Descriptive statistics of each independent variable for the years 2011 through 2015 are illustrated in Table 4.1.

Insert Table 4.1 about here

Procedure

Several observations were made to identify the relationships between public investment and the measurable outputs of Texas community colleges via multiple regression analyses. The analyses were conducted through the standard regression method, in which all independent variables were simultaneously entered in the equation in a single step (Meyers, Gamst, & Guarino, 2013). Regression models were interpreted using both *p*-values and effect sizes (R^2). Effect sizes for each of the results were calculated and are presented in the context of prior research.

The researcher assessed the predictability of each independent variable using guidance discussed in Courville and Thompson (2001) and in Kraha et al. (2012). This included the use of standardized beta coefficients which were used to rank the predictive contribution of each independent variable to the dependent variable (Meyers et al., 2013; Pedhazur, 1982, 1997; Pedhazur & Schmelkin, 1991). Structure coefficients were also used to interpret variable importance. Structure coefficients are measurements between observed independent variables and predicted dependent variable scores (Field, 2013; Kraha et al., 2012; Meyers et al., 2013). When squared, these coefficients can inform the percent of the effect size that can be explained by each independent variable by itself. Assumptions of multiple regression were examined prior to interpretation of results. There were no violations to these assumptions.

Results

Combined Graduation and Persistence Rates

Separate regression analyses predicting combined graduation and persistence rates were conducted first for each fiscal year (2011 – 2015). The overall regression model was not statistically significant for FY 2011, $F(4, 65) = .001$, $p = .967$, $R^2 = .09$; FY 2012, $F(4, 66) = .011$, $p = .413$, $R^2 = .06$; FY 2013, $F(4, 65) = .002$, $p = .838$, $R^2 = .02$; FY 2014, $F(4, 66) = .008$, $p = .346$, $R^2 = .07$; and FY 2015, $F(4, 66) = .012$, $p = .331$, $R^2 = .07$. Further, the *R*-squared effect size for each model was small (.01 - .07), which indicated that combined graduation and persistence rates had little predictive value in this study (Cohen, 1988). The results of each model for the years 2011 through 2015 are illustrated in Table 4.2.

Insert Table 4.2 about here

Isolated Graduation Rates

Separate regression analyses were then conducted with isolated the graduation rates of Texas community colleges for each fiscal year observed in this study (2011 – 2015). The overall model was found to be statistically significant for FY 2011, $F(4, 66) = .054$, $p < .001$, $R^2 = .39$; FY 2012, $F(4, 66) = .046$, $p < .001$, $R^2 = .40$; FY 2013, $F(4, 66) = .023$, $p = .001$, $R^2 = .24$; FY 2014, $F(4, 66) = .028$, $p < .001$, $R^2 = .26$; and FY 2015, $F(4, 66) = .023$, $p = .001$, $R^2 = .24$. The *R*-squared effect size for each model ranged from small to medium (.24 - .40), indicated that graduation rates separated from persistence rates had predictive value when relationships with the public investment independent variables were measured (Cohen, 1988). The results of each model for the years 2011 through 2015 are illustrated in Table 4.3.

Insert Table 4.3 about here

Because each model (2011 – 2015) was statistically significant, beta weights and structure coefficients were examined to further explore which variables contributed most to the prediction of graduation rates for each year. Only the state appropriations variable was identified as a statistically significant predictor for each year. This variable was positively related to graduation rates and explained between 47% and 84% of the *R*-squared effect size for each model. In contrast, the state appropriations variable was

negatively related to graduation rates in 2014. The ad valorem property taxes variable was also a statistically significant predictor of graduation rates in 2011, 2013, and 2014. The variable explained between 9% and 36% of the *R*-squared effect size for three of the years in this study and was negatively related to the graduation rates. The CFI rates variable was positively related to graduation rates in 2012 and it explained 4% of the *R*-squared effect size for the 2012 model (r_s^2 = .041).

Isolated Persistence Rates

Lastly, separate regression analyses were conducted with isolated the graduation rates of Texas community colleges a for each fiscal year observed in this study (2011 – 2015). The overall model was found to be statistically significant for FY 2011, $F(4, 66) = .038$, $p = .010$, $R^2 = .18$; 2012, $F(4, 66) = .040$, $p = .001$, $R^2 = .24$; and FY 2014, $F(4, 66) = .026$, $p = .009$, $R^2 = .18$. The model was not statistically significant for FY 2013, $F(4, .66) = .008$, $p = .443$, $R^2 = .05$ and FY 2015, $F(4, 66) = .017$, $p = .055$, $R^2 = .13$. The effect sizes for these years were 5% and 13%, respectively, as determined by the *R*-squared values. The *R*-squared effect size for each model was small to medium (.05 - .25), indicating that persistence rates could not be predicted as well in comparison to graduation rates alone. The results of each model for the years 2011 through 2015 are illustrated in Table 4.4.

Insert Table 4.4 about here

Because the models for 2011, 2012, and 2014 were statistically significant, beta weights and structure coefficients were examined to further explore which variables

contributed most to the prediction of persistence rates. Only the state appropriations variable was identified as a statistically significant predictor in each of these three years. This variable was negatively related to persistence rates and explained between 1% and 94% of the *R*-squared effect size of the model. A statistically significant negative relationship between ad valorem property taxes and persistence rates was also observed in 2014. This variable explained 48% of the *R*-squared effect size for the 2014 model (r_s^2 = .048).

Discussion

Four concluding points emerged from the analysis in this study. First, increased state spending on community colleges could take some of the financial burden off of students and help them to graduate or transfer to 4-year institutions more quickly. This likelihood was illustrated, at least indirectly, through the case of Texas community colleges in this study (Mukherjee, McKinney, Hagedorn, Purnamasari, & Martinez, 2017). This revelation supports the notion that any future failures by the Texas government to align community college appropriations with institutional needs could have detrimental effects on the completion by Texas community college students of their educational goals (Mukherjee et al., 2017).

Second, the traditional approach of observing the individual isolated graduation rates and persistence rates, as opposed to measuring the combined rates, was more effective in uncovering relationships between Texas community college appropriations and their outputs. Statistically significant relationships between the dependent variable of combined graduation and persistence rates and the public investment variables were not detected, whereas significant relationships were detected when graduation rates and

persistence rates were separated as individual dependent variables. Consequently, studies that do not differentiate between the combined and isolated metrics of graduation and persistence rates may mask or overlook significant relationships.

Third, the dependent variables in the second and third models were affected the most by state appropriations and to a lesser extent by ad valorem property taxes. Accordingly, state appropriations, and to a lesser degree, ad valorem property taxes, could be used as predictors of student completion in terms of separated graduation rates and persistence rates. Fourth, increased public funding was not associated with positive effects for both graduation and persistence rates. Whereas graduating and persistence are both considered to be positive outcomes for community colleges, they were affected differently by public investment. The demonstration of a positive relationship between state appropriations and graduation rates as well as the negative relationship between state appropriations and persistence rates in the results of this study can inform policymakers that increasing state community college funding might not generally achieve both aims. Moreover, an improvement in one outcome (i.e., graduation rates) through increased state funding could result in a decline in the other outcome (i.e., persistence rates).

Comparisons in the Context of the Broader Literature

Several scholarly articles offered a context through which the models in this study can be compared to the broader literature. Delaney (2011) reported *R*-squared values ranging from .14 to .90, indicating a "strong and robust" relationship observed between federal earmarks and state higher education appropriations (p. 20). Humphreys (2000) reported *R*-squared values ranging from .19 to .82 and that "state appropriations to

[general] higher education are highly sensitive to changes in the business cycle" (p. 398). Hillman, Tandberg, and Gross (2014) reported *R*-squared sizes ranging from .14 to .99 to describe effect sizes of Colorado's voucher model for higher education on reduced college access and increased community college cost efficiencies. Hillman, Tandberg, and Fryar (2015) investigated a statewide accountability system for community colleges based on retention rates and degree productivity, the Student Achievement Initiative. The authors reported main model *R*-squared values ranging from .35 to .95, which they considered to be "robust" (Hillman et al., 2015, p. 501).

Whereas none of the aforementioned studies examined exactly the same inputs or outputs these studies had greater explanatory power. However, the effect sizes models predicting graduation rates in this study (.24 - .39) were within the lower parameters of the results presented by Delaney (2011), Humphreys (2000), Hillman et al. (2014), and Hillman et al. (2015). The statistically significant effect sizes in this study exploring persistence rates (.18 - .25) were within the parameters of the results illustrated by Delaney (2011), Humphreys (2000), Hillman et al. (2014). However, they were not within the parameters of the findings presented by Hillman et al. (2015). Consequently, conceptual future models for predicting graduation and persistence rates should encompass groups of independent variables that expand beyond the variables observed in this study, which were constrained based on the number of community colleges in Texas. This limitation could not be easily addressed without student-level data.

Limitations and Future Research

An enhanced understanding of the relationships between public financial inputs and the measurable outputs of Texas community colleges was facilitated through analysis

of the combined graduation and persistence rates, isolated graduation rates, and isolated persistence rates of Texas community colleges from 2011 to 2015 as affected by state appropriations, federal grants and contracts, local ad valorem tax revenues, and institutional financial viability. Differences between potential effects of public funding decreases on credit-level, non-developmental students were discussed. An important limitation of this investigation was that revenues from tuition and fees were excluded from the measurable financial inputs of Texas community colleges as the focus of this study was centered on the relationships between public investment and Texas community college outputs. Additional limitations of this study were that the population observed was limited to community colleges exclusively in Texas and that several years were excluded from the observation. The addition of multiple states and an extension of years observed may reveal more information regarding patterns of relationships between public investment and community college outputs.

Suggestions for future research include conducting similar analyses of graduation and persistence rates with models including the independent variables observed in this study as well as variables that represent additional factors, including publically funded student-focused initiatives (e.g., Hillman et al., 2015). An example might include a model with public the investment variables used in this study combined with variables that include Title V grant initiatives that benefit various individual institutions. Additional suggestions for future research include similar studies centered on the graduation and persistence rates of students who required developmental education instead of students who did not require developmental education and Texas community colleges as well as conducting qualitative analyses of the effects of public investment on

Texas community college students, faculty, and administrators. These suggestions could expand understanding of how individual stakeholders are directly affected by changes in public investment in community colleges.

Conclusion

Statistically significant relationships between the public investment variables and the combined graduation and persistence rates of Texas community colleges were not detected during the years observed in this study (2011 – 2015). There was no evidence to support the notion that the combined graduation and persistence rates could be better predicted by the variables in this study. Combined graduation and persistence rates may hold more value as predictors than when they are observed as the outcome of a study.

Upon further investigation, the combined graduation and persistence rates were separated and observed individually as dependent variables. Statistically significant relationships between the public investment variables and the two rates were present when they were analyzed separately. State appropriations were positively related to graduation rates in this study. In contrast, tax revenues were negatively correlated to graduation rates for three of the five observed years (2011, 2013, and 2014). This may be explained by a possible likelihood of community college students in more affluent districts to transfer to universities sooner than students in less affluent community college districts.

The negative relationships between state appropriations and persistence rates indicated that increases in state spending on community colleges were associated with decreased student persistence. This relationship is unlikely to be reflective of actual graduation rates considering that state appropriations were positively related to

graduation rates in this study. Considering the positive beta values for state appropriations related to graduation rates, students likely benefitted from increased state funding and they could have graduated or transferred to 4-year institutions at faster paces as the Texas Legislature awarded increasing average amounts of funding to Texas community colleges per full-time equivalent student from 2011 to 2015. Conversely, these students were neither persisting after three years nor had they graduated and were consequently not accounted for in the observed isolated persistence rates. Resultantly, the outputs of Texas community colleges in terms of student completion (i.e., graduating or transferring to universities) are likely to be directly affected by public investment.

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Table 4.1

Descriptive Statistics of Variables Observed in First, Second, and Third Models

Variable	2011		2012		2013		2014		2015	
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
DV (Model 1) – Grad. And Pers. Rates (combined)	.56	.09	.54	.10	.53	.08	.53	.08	.55	.10
DV (Model 2) – Grad. Rates	.19	.09	.19	.08	.19	.08	.21	.08	.22	.07
DV (Model 3) – Pers. Rates	.36	.11	.35	.10	.33	.09	.32	.09	.34	.09
IV1 -State App.	2365.94	413.71	2231.67	352.50	2371.30	626.31	2458.21	475.23	2570.45	401.13
IV2 - Fed. App.	6419922	7160643	5948206	6716631	5601129	6187173	4749010	4985034	4825044	5112430
IV3 - Ad Tax Rev.	2706.61	1512.25	2923.50	1684.55	3328.96	2207.49	3514.80	2012.69	3811.27	2135.73
IV4 - CFI Rates	4.42	8.07	4.05	1.98	3.70	2.17	3.97	2.39	1.86	2.55

Note. The total number of units measured was 71 individual institutions.

Table 4.2

Standardized Beta Coefficients, p-values Associated with Regression Coefficient, and Squared Structure Coefficients for Regressions with Combined Graduation and Persistence Rates as Dependent Variable

	2011			2012			2013			2014			2015		
IV	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2
State App.	-.047	.713	.104	-.070	.595	.007	.100	.490	.625	-.219	.828	.052	.103	.425	.344
Fed App.	-.032	.813	.154	-.208	.114	.688	-.078	.557	.369	-2.039	.045	.864	-.104	.441	.488
Tax Rev.	.014	.109	.014	-.010	.938	.003	.018	.897	.117	.604	.548	.018	-.012	.925	.119
CFI Rate	-.075	.580	.697	.104	.408	.331	.059	.645	.048	.478	.634	.038	-.161	.206	.562
R^2		.009			.057			.021			.065			.066	
Sig.		.967			.413			.838			.346			.331	
F		.140			1.001			.357			1.139			1.172	

Note. The total number of units measured was 71 individual institutions.

Table 4.3

Standardized Beta Coefficients, p-values Associated with Regression Coefficient, and Squared Structure Coefficients for Regressions with Graduation Rates as Dependent Variable

	2011			2012			2013			2014			2015		
IV	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2
State App.	**.466**	.000	.619	**.499**	.000	.739	**.465**	.000	.478	**-.343**	.003	.473	**.448**	.000	.840
Fed App.	-.103	-.331	. 231	-.171	.104	.360	-.108	.356	.249	**-.147**	.204	.381	.016	.897	.136
Tax Rev.	**-.344**	.001	.327	-.138	.171	.139	**-.324**	.011	.089	**-.290**	.015	.361	-.201	.085	.154
CFI Rate	-.060	.552	.039	**.224**	.029	.041	.170	.132	.007	-.048	.672	.069	.094	.410	.000
R^2		.390			.395			.237			.264			.237	
Sig.		**.000**			**.000**			**.001**			**.000**			**.001**	
F		10.568			10.784			5.119			5.918			5.117	

Note. The total number of units measured was 71 individual institutions. Statistically significant regression *p*-values at the 0.05 level (2-tailed) and beta coefficients with corresponding statistically significant *p*-values are marked in bold font.

Table 4.4

Standardized Beta Coefficients, p-values Associated with Regression Coefficient, and Squared Structure Coefficients for Regressions with Persistence Rates as Dependent Variable

	2011			2012			2013			2014			2015		
IV	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2	β	*p*	r_S^2
State App.	**-.328**	.006	.007	**-.498**	.000	.935	-.159	.260	.207	**-.320**	.008	.339	**-.261**	.039	.303
Fed App.	.152	.216	.328	-.081	.488	.043	.104	.420	.379	-.117	.337	.012	-.151	.246	.036
Tax Rev.	.155	.188	.206	.106	.346	.133	.140	.311	.124	**.321**	.010	.478	.167	.177	.037
CFI Rate	-.074	.525	.001	-.076	.501	.006	-.137	.273	.069	.098	. 413	.069	-.251	.043	.376
R^2		.181			.247			.054			.184			.129	
Sig.		**.010**			**.001**			.443			**.009**			.055	
F		3.652			5.412			.945			3.721			2.440	

Note. The total number of units measured was 71 individual institutions. Statistically significant regression *p*-values at the 0.05 level (2-tailed) and beta coefficients with corresponding statistically significant *p*-values are marked in bold font.

CHAPTER V

Summary and Conclusion

The contributions of Study 1, Study 3, and Study 3 in this dissertation will be discussed in this final chapter. Implications for policy and practice that may be predisposed by the findings in these studies are included within the discourse in this final chapter. This chapter will conclude with suggestions for future research related to the topics analyzed in this dissertation and a synthesis of the findings in the entailed studies.

Contributions of Study 1, Study 2, and Study 3

Contributions to the area of state-level community college policy resulted from the combined findings of Study 1, Study 2, and Study 3. Through these three studies, I have (a) examined the themes intrinsic to the academic literature centered on state-level community college policy; (b) observed the relationships between political associations, economic factors , and demographic shifts on the changes in community college appropriations granted by 48 of the 50 state governments in the United States; and (c) investigated the effects of fluctuations in public community college funding on each of the 50 Texas community college districts and systems. Collectively, these studies enabled the development of new insight to the phenomenon of state-level community college policy.

Syntheses, a descriptive analysis, and a classical content analysis were conducted on 48 academic journal articles in Study 1 in this dissertation. 80 different first-cycle codes were categorized into four second-cycle codes, with 3,885 individual code entries marked throughout all of the selected articles. The observed body of literature revealed that appropriations were the primary focus of the majority of the articles published

between 2006 - 2017. However, first-cycle codes revealed that college completion, economic factors, and performance-based funding were the primary policy issues within state community college policy. Quantitative and qualitative research methods were equally utilized within the body of selected literature. Two noteworthy characteristics of the selected literature on state-level community college policy were (a) the permeation of a negative outlook on the future effects on institutions and (b) a lighter effect of partisan politics than expected on state-level community college policy. Identified challenges to community colleges included (a) systematic declines in state appropriations, (b) economic uncertainty, (c) corporatization, and (d) growing student populations that are outpacing the growth of institutional capabilities.

The relationships between state community college appropriations and various political, demographic, and economic factors were observed in Study 2. The dependent variable of percentage changes in state appropriations granted to community colleges for 48 states was observed in relation to five independent variables: (a) legislature size, (b) partisan proportion of lower chamber, (c) change in state population from previous year, (d) change in state taxes collected, and (e) change in state per capita income. The model was applied to observe relationships for each year from 2010 through 2014, with statistically significant relationships revealed only for the year 2013, in which changes in state per capita income and changes in total state taxes collected were the two most relevant predictors. As such, four key findings were uncovered: (a) state community college appropriations were increasingly consistent across the United States during the years observed; (b) changes in state community college appropriations were more complex than expected and that prediction of these changes requires observation of

different groups of independent variables across the different states; (c) changes in per capita income and changes in taxes collected by the states were predictors of changes in state community college appropriations, but only for one of the observed years; and (d) partisan politics had minimal effect on changes in state community college appropriations from previous years, validating the findings in Study 1 of this dissertation. Considering that 2013 was the only year in which a statistically significant relationship between the dependent variable and the construct of independent variables was observed in Study 2, the year might have been significant in terms of issues affecting state community college appropriations nationwide. The comparatively high number of scholarly articles published in 2014 (per the results of Study 1) on state community college policy-related topics including performance-based funding, increases in enrollment, tuition increases, and state-specific programs may have been in reaction to possible effects by these topics on changes in state community college appropriations that were observable via economic factors in 2013 (Bowling, Morrissey, & Fouts, 2014; Brand, 2014; Phelan, 2014; Serna & Harris, 2014). However, no distinct connection was made in this dissertation.

In Study 3, the focus of public community college funding was narrowed to one state, Texas. The relationships between public funding and measured outputs of Texas community colleges were observed within the additional context of institutional financial viability measured through the mediating variable of the Composite Financial Index (CFI) rates per each institution. As such, four independent variables formed the construct of *public investment* for this study: (a) state appropriations per full-time equivalent students awarded to Texas community colleges; (b) federal appropriations per full-time equivalent students awarded to Texas community colleges; (c) total ad valorem taxes

collected Texas community colleges per full-time student equivalent; and (d) the CFI rates of Texas community colleges, a mediating variable.

State appropriations awarded to Texas community colleges was the most influential component of the public investment construct on the outcomes of community colleges and the variable comprised three parts: (a) a $1 million annual base funding component per each Texas community college district; (b) formula funding for each Texas community college based on contact hours at each institution; and (c) performance-based funding, which can account for up to 10% of Texas community college budgets depending on amounts awarded. The measured outputs of Texas community colleges were graduation rates and persistence rates, observed in combined and isolated forms through three regression models. The dependent variable for the first regression model was combined graduation and persistence rates.

No statistically significant relationships were observed between the dependent variable and the public investment construct variables. However, statistically significant relationships were uncovered when the graduation rates and persistence rates were separated and were observed as individual dependent variables in the second and third regression models. The effect sizes observed in the second and third regression models, although of small and medium sizes, ranged in comparison to the effect sizes presented in similar higher education research.

Statistically significant relationships between the public investment variables and graduation rates of Texas community colleges were observed for each of the years observed. Of the group of public investment variables, state community college appropriations had statistically significant beta coefficients for each of the years

observed. The beta values of ad valorem tax revenues were statistically significant for three of the five observed years (2011, 2013, and 2014). There was a significant beta value for federal appropriations in 2014 and for CFI rates in 2012.

Statistically significant relationships were uncovered between persistence rates of Texas community colleges and the group of public investment variables for three of the five years observed (2011, 2012, and 2014). State appropriations for Texas community colleges had statistically significant negative beta values for each of these years. The beta value of ad valorem tax revenues of Texas community colleges was statistically significant for 2014. Whereas, decreases in state appropriations could hinder institutions' resources and abilities to assist students in completing their degrees. Tax revenues may also have an impact on student graduation.

The positive beta values for state community college appropriations for all five observed years when graduation rates were measured as a dependent variable and the negative beta values for state appropriations for three of the five observed years when persistence rates were measured as a dependent variable indicated evidence that state community college appropriations have a strong effect on student completion. Increases in state appropriations help students to graduate, as indicated through the significant beta values (graduation rates). The negative beta values (persistence rates) do not provide as clear of an illustration as the positive beta values for graduation rates, and they could reflect that students were transferring to other 4-year institutions as a result of the benefits of comparatively higher levels of state funding for community colleges.

Four key points emerged from Study 3 in this dissertation. First, increases in state spending on community colleges are likely to help students graduate or transfer to 4-year

institutions at faster rates. Second, observing relationships between public investment and community college outputs through separating graduation rates and persistence rates was more effective than observing the rates as a single combined metric. Third, state appropriations, followed by ad valorem property tax revenues, had the greatest effect on measured community college outputs. Consequently, both variables could be used as predictors of overall institutional student progress as measured by separated graduation and persistence rates. Fourth, increased public funding for Texas community colleges was not associated with positive effects for both graduation and persistence rates. State appropriations was positively related to graduation rates, but negatively related to persistence rates for the years observed in which statistically significant relationships were detected.

It was important to separate graduation and persistence rates from a combined metric for the third study in this dissertation. Whereas it is positive that community college students graduate and that they are persisting, there are factors that may be keeping students from graduating in a timely manner and continuously enrolling in classes from semester to semester. A substantial part of this phenomenon may be explained by the study presented by Mukherjee, McKinney, Hagedorn, Purnamasari, and Martinez (2017), in which students who took on more of the financial burden for the costs of community colleges were less likely to complete degrees. Accordingly, it is possible that students who experience less financial stress are completing degrees or are transferring to 4-year universities while students who experience more financial stress remain in 2-year institutions without graduating and are less able to complete their educational objectives.

Furthermore, propositions for community college reform, such as the call for a "guided pathways" model of community college education submitted by Bailey, Jaggers, and Jenkins (2015), may connect to the same reasons that separating graduation and persistence rates was more telling of the impact of fluctuations in public financial support for community colleges than observing the combined rates. The authors' suggested "guided pathways" model requires strong and consistent levels of public investment in order to facilitate successful student completion of high-quality credentials through offering programs comprising components intentionally designed to be holistic and transfer-compatible. Although community colleges were found to be substantially insulated from partisan politics on the state-level in this dissertation, the systematic decline in appropriations must be reversed in order to enable institutions to facilitate the maximization of the economic and social potential of constituent students.

Implications for Policy and Practice

The results of Study 2 in this dissertation indicated that community colleges across the United States are relatively insulated from partisan politics in terms of the state appropriations that they are awarded. This is likely due to the notion that societies at-large benefited from the services and educational processes offered by community colleges as much as their students did (Bowen, 1977). Due to community colleges being largely insulated from partisan politics nation-wide and in Texas, drastic appropriations reductions and over-regulation at the state-level could likely stifle economic growth and may have detrimental electoral consequences for those who would support such funding cuts. Although community colleges across the United States have experienced systematic declines in public funding over an extended period of time, proposals for drastic cuts in

community college appropriations are not recommended (Kennamer, Katsinas, Hardy, & Roessler, 2009; Klein, 2015; Phelan, 2014; St. John & Paulsen, 2001; Thelin, 2005).

Political associations and demographic shifts had less of a detectable effect on state appropriations for community colleges than originally expected by the researcher in this dissertation; however, economic factors had detectable effects on state community college appropriations for one of the years observed. Economic factors are likely to have significant effects on public funding for community colleges in the future as all line-items are invariably connected to state economies. State per capita income levels and the amounts of tax revenues collected by state governments were the two most prevalent economic factors to affect state community college funding and are often connected to policymaker accountability.

Lawmakers and policymakers are urged to direct budget cuts away from community colleges during times of slowed economic activity considering the perceived favorability of these institutions by both major political parties at the state level. Furthermore, elected officials must be made aware that increasing funding does not necessarily affect both graduation and persistence in positive ways, as was demonstrated in Study 2. Therefore, lawmakers and policymakers should not hold institutions simultaneously accountable for graduation rates and for persistence rates as measures of return on the investment of state appropriations.

State funding formulas for community colleges are inherently connected to enrollment headcounts and contact hours. However, as community colleges across the United States focus on growing their numbers of enrolled students on the front end of their processes, they are likely to overlook their measured outputs. Emphasis on

enrollment maximization is likely to affect graduation and persistence rates (Bailey, Jaggers, & Jenkins, 2015).

Bailey, Jaggers, and Jenkins (2015) postulated that community colleges that prioritize course enrollments are not likely to maximize completion of programs of study. Consequently, a larger share of community college should be based on metrics that account for student completion needs (i.e., numbers of courses needed for degree completion by currently enrolled students) rather than on enrollments or contact hours if public funds are to be spent in the most effective manner. State funding models for community colleges based on student completion needs could be more effective than the enrollment-centered status quo because the missions of community colleges are centered successful student completion and not on recruitment of additional students. However, such arrangements will entail their own issues as states could defund institutions that do not increase graduation rates in alignment with increased funding allocations.

Recommendations for Future Research

The process of conducting the three studies in this dissertation led to several areas for which future research might be conducted. The systematic literature review of state-level community college policy (Study 1) in this dissertation was limited to articles published in peer-reviewed scholarly journals during a single decade from 2006 to 2017. More information is available from scholarly articles on state-level community college policy that were published before or after the time period observed in this dissertation. Additionally, researchers are likely to uncover new themes common to literature on state-level community college policy by expanding the observed period of time to include articles published before or after the period from 2006 to 2017. Although this

dissertation entailed a systematic review of the most recent research literature, the themes uncovered are likely to have originated long before the observed time period. A study of the origins of these themes would likely offer enhanced insight into the current condition of state-level community college policy.

Whereas the first quantitative study in this dissertation (Study 2) encompassed a wide range of independent variables, statistically significant relationships were found for only one of the five observed years (2011-2015). A similar model applied to a wider amount of observed years might yield meaningful results. Additionally, similar studies incorporating different predictor variables might predict better the changes in state appropriations for community colleges across the United States, including mediator variables that represent line-items with which community college appropriations may compete for funding during legislative sessions. Suggestions for further research include similar studies that take into account a wider range of years observed, the inclusion of shifts in community college enrollments per state, and the inclusion of line items in state budgets that might compete with community colleges for funding, such as universities, prisons, Medicaid, and hospitals.

Statistically significant relationships between the public financial inputs and the outputs of Texas community colleges in terms of graduation and persistence rates in the second quantitative study in this dissertation (Study 3). However, the observations in the study were limited to Texas community colleges students who did not require developmental or remedial education. A separate study for Texas community college developmental students is suggested because students requiring developmental education

might be more vulnerable to fluctuations in public funding awarded to their community colleges (Bailey, Jaggers, & Jenkins, 2015).

Similar studies encompassing additional measured outputs (e.g., student success rates, student transfers to 4-year institutions, socioeconomic statuses, parental education levels, and gender) as well as similar studies applied to community colleges in different states are also likely to augment the findings in this dissertation. Additionally, community colleges often serve traditionally underrepresented groups of students. Future studies in which the data observed in this dissertation is disaggregated by institution type in terms of primary student populations served, with emphases on Minority-Serving Institutions (MSIs), are likely to unveil new information on how traditionally underrepresented populations are affected differently by variations in state community college appropriations and governance. Such studies could be informative in terms of comparisons among states as well as regarding the outcomes of institutions based on populations primarily served.

Instructional delivery methods are additional factors that could account for the effectiveness of institutional use of public resources as observed through measurable outcomes. A trend in state governance of higher education since the 1990s has been a mandated shift toward increasing educational access via online instructional delivery methods (Mumper, 2001). Studies that address proportions of online and hybrid versus in-person sections offered by community colleges are likely to enhance understanding of the effects of public funding on institutional outputs. Finally, future research is suggested that encompasses qualitative research methodologies on the same topics for which quantitative studies were conducted in this dissertation. Studies limited to one research

paradigm (e.g., quantitative or qualitative) will not encompass the entireties of their observed phenomena according to the postpositivist theoretical framework adopted in this dissertation (Creswell, 2011; Greene & Caracelli (2003); Lincoln, Lynham, & Guba, 2011).

In Conclusion

Researchers of state-level community college policy must address their observed phenomena within theoretical frameworks that account for the quantitative and qualitative paradigms in order to gain more holistic insights into the effects of state policies on institutions and on students. Each community college student across the U. S. has the potential to make many meaningful social and economic contributions. It is the responsibility of governments on all levels as well as of the public to support the maximization of students' potentials for meaningful contributions via well-resourced community colleges that provide clear, affordable routes for students toward their chosen educational and career goals (Bailey, Jaggers, & Jenkins, 2015; Mukherjee et al., 2017). As such, policymakers must reverse the systematic decline in public community college funding that institutions across the United States have experienced since the later part of the 20th century in order to fulfill the public obligation of effectively fostering student development (Cohen & Kisker 2010; Kennamer, Katsinas, Hardy, & Roessler, 2009; Klein, 2015; Phelan, 2014; St. John & Paulsen, 2001; Thelin, 2005).

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APPENDIX

Sam Houston STATE UNIVERSITY
A Member of The Texas State University System

Institutional Review Board
Office of Research and Sponsored Programs
903 Bowers Blvd, Huntsville, TX 77341-2448
Phone: 936.294.4875
Fax: 936.294.3622

DATE:TO:FROM: PROJECT TITLE:
PROTOCOL #: SUBMISSION TYPE:
ACTION:DECISION DATE: REVIEW CATEGORY:
May 22, 2017
Kelly Jacobs [Faculty Sponsor: Dr. Forrest Lane]
Sam Houston State University (SHSU) IRB
State-level Community College Policy: A Systematic Review and Multivariate Investigation [T/D]
2017-05-34716 INITIAL REVIEW DETERMINATION OF EXEMPT STATUS May 22, 2017
Category 4—research involving existing, publicly available data usually has little, if any, associated risk, particularly if subject identifiers are removed from the data or specimens.
Thank you for your submission of Initial Review materials for this project. The Sam Houston State University (SHSU) IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.
We will retain a copy of this correspondence within our records.
*** What should investigators do when considering changes to an exempt study that could make it nonexempt?**

It is the PI's responsibility to consult with the IRB whenever questions arise about whether planned changes to an exempt study might make that study nonexempt human subjects research. In this case, please make available sufficient information to the IRB so it can make a correct determination.
If you have any questions, please contact the IRB Office at 936-294-4875 or irb@shsu.edu. Please include your project title and protocol number in all correspondence with this committee.

Sincerely,
Donna Desforges

IRB Chair, PHSC

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Sam Houston State University IRB's records.

VITA

KELLY O. JACOBS

PUBLICATIONS

Jacobs, K. O. (2016). Dr. Martin Luther King the modernist and minister Malcolm X the postmodernist: An analysis of perspectives and justice. In J. L. Conyers & A. Pitre (Eds.), *Africana Islamic studies: The Africana experience and critical leadership studies* (pp. 175-186). Lanham, MD: Rowan & Littlefield Publishing Group, Inc.

Jacobs, K. O., & Slate, J. R. (2015). Differences in administrative cost ratios of Texas community colleges over time. *International Journal of University Teaching and Faculty Development, 5*(3), 1-10.

CONFERENCE AND SYMPOSIUM PRESENTATIONS:

Jacobs, K. O. (2018, February). *The Effects of Fluctuations in Public Subsidies on Texas Community Colleges.* Paper presented at the meeting of the Southwest Educational Research Association, New Orleans, LA.

Jacobs, K. O. (2017, February). *Challenges of a Doctoral Student: A Multi-Year Study of Stressors and Coping.* Paper presented at the meeting of the Southwest Educational Research Association, San Antonio, TX.

Jacobs, K. O. (2016, May). *Differences in Administrative Cost Ratios of Texas Community Colleges Over Time*. Poster presented at the NISOD International Conference on Teaching and Leadership Excellence, Austin, TX.

Jacobs, K. O. (2016, February). *The Effects of Federal and State Subsidies on Higher Education Operating Margins and Outputs*. Paper presented at the meeting of the Southwest Educational Research Association, New Orleans, LA.

Jacobs, K. O. (2015, February). *The Effects of State Higher Education Appropriations on Community Colleges.* Paper presented at the meeting of the Southwest Educational Research Association, San Antonio, TX.

Jacobs, K. O., et. al. (2015, February). *Perceived Self-Efficacy of Research Skills of Select Higher Education Administration Doctoral Students.* Paper presented at the meeting of the Southwest Educational Research Association, San Antonio, TX.

Jacobs, K. O. (2009, April). *Arendt and the Pursuit of Public Happiness: Possibilities in the Twenty First Century.* Paper presented at the meeting of the Western Social Sciences Association, Albuquerque, NM.

Jacobs, K. O. (2009, April). *The First One Hundred Days of the 111th Congress: A Battle between Reason and Faith.* In J. R. Taylor (Chair), *University of St. Thomas Research Symposium*. Symposium conducted at the University of St. Thomas, Houston, TX.

Jacobs, K. O. (2005, April). *The Political Problems of Contemporary America as Viewed Through the Lens of Ancient Philosophy.* In J. R. Taylor (Chair), *University of St. Thomas Research Symposium*. Symposium conducted at the University of St. Thomas, Houston, TX.

ACADEMIC CREDENTIALS:

SAM HOUSTON STATE UNIVERSITY, Huntsville, TX

Doctor of Education, *Higher Educational Leadership* (2018 *anticipated graduation*)

- Dissertation entitled *State-Level Community College Policy: A Systematic Review and Multivariate Investigation*.
- Areas of interest: higher education law, policy and governance; higher education finance; leadership theory; organizational theory; higher education curriculum; student development theory; multivariate statistical research methods; and qualitative research methods.
- Internship/Practicum: *Department of Analytics and Institutional Reporting*, Lone Star College System—System Office. Construction and analysis of multi-year workforce student and program dataset (Fall, 2015).

UNIVERSITY OF ST. THOMAS, Houston, TX

Master in Liberal Arts, *Political Science* (2009)

- Areas of interest: American politics, political theory, public administration, and East Asian politics.
- Thesis entitled: *Democratic Legitimacy: An Inescapable Universal in the Postmodern Era.*

UNIVERSITY OF HOUSTON, Houston, TX

Graduate Certificate, *Africana Studies* (2013)

- Areas of interest: Civil Rights Movement, Pan-Africanism, African American politics, and the sociology of W. E. B. DuBois.

UNIVERSITY OF ST. THOMAS, Houston, TX

Bachelor of Arts, *Political Science—Cum Laude* (2005)

- Major in *Political Science* with a concentration in *Public Administration*.
- Minor in *Philosophy*.
- Authored senior thesis entitled: *The Political Problems of Contemporary America as Viewed Through the Lens of Ancient Philosophy*.

PROFESSIONAL HIGHER EDUCATION EXPERIENCE:

8/2015 to present (2018) **LONE STAR COLLEGE SYSTEM**, Houston, TX

Dean of Instruction, LSCS—Greenspoint Center and Victory Center

- Supervision of over 100 adjunct and 19 full-time academic faculty and workforce skilled instructors at two college centers with a combined student body of approximately 3,000 students.
- Financial management of instructional and workforce operational budgets for two college centers.
- Section management and schedule building for two college centers.

- Classroom allocation/management and room grid creation/distribution for two college centers.
- Community outreach and relationship building with college centers' service area communities and stakeholders.
- Review and processing of student grade disputes and appeals.
- Member of system-wide *Diversity Advisory Committee*.
- Co-facilitator of *LSC 20/20*, system-wide cultural values training.
- Founding administrative member of Lone Star College's seventh college, *LSC-Houston North*, set to open in Fall, 2019—member of Steering Committee and of Scheduling and Offerings Committee.
- Graduate of Lone Star College *Leadership Academy* (2016 cohort); *Leadership Coach* (2017 - 2018).
- Creation and chair of *Centers Collaboration Committee*, which facilitates connections between faculty and student services personnel.
- Chair of hiring committees for full-time faculty positions in political science; humanities; and heating, ventilation, air conditioning (HVAC), and mathematics.
- Member of hiring committee to select the *Vice President of Centers, LSCS—Greenspoint Center and Victory Center* (Fall, 2015).
- Chair of committee to select annual student winner of the *LSCS 2016 Foundation Essay Contest*. Coaching of essay contest winner to present winning essay at the *2016 Annual LSCS Chancellor's Breakfast*.

8/2012 to 8/2015 **LONE STAR COLLEGE SYSTEM**, Houston, TX

Associate Professor of Political Science, LSCS—Victory Center

- Instruction of *Government 2305: Federal Government*; *Government 2306: Texas Government*; and, *Humanities 1301: Prehistory to Gothic* at LSCS Victory and Greenspoint centers.
- Lead Faculty (department chair responsibilities—recruiting and direct supervision of adjunct instructors): government, history, humanities, philosophy, physical education (2015 to present).
- Lead Faculty (department chair responsibilities—recruiting and direct supervision of adjunct instructors): government, economics, business, criminal justice, computer science, and professional office administrative services (2013 to 2015).
- Compliance Officer and Campus Liaison, Student Learning Outcomes (SLO) assessments for all government classes at LSCS North Harris and centers for SACSCOC accreditation compliance (2013 to 2015).
- Co-chair, Civic Engagement Initiative Committee, LSCS North Harris and centers.
- Faculty Fellow, Learning Management System (D2L)—LSCS Greenspoint Center and Victory Center. Provided technical and course design advice to instructors who taught online using the Desire2Learn learning management system (2013 to 2014).
- Faculty Advisor for *Brother for Brother (B4B)*, student ambassador organization.
- Director of LSCS Victory Center Service Learning Community Garden (2013 to present).

- Screening committee member for positions of Director of Library Services, LSCS—North Harris; faculty positions in mathematics (two positions) and speech (two positions).

6/2010 to 12/2012 **LONE STAR COLLEGE SYSTEM**, Houston, TX
Adjunct Professor of Political Science

- Instruction of *American Government: National, State, and Local I and II* (GOVT 2301 and GOVT 2302) at LSCS North Harris and LSCS Carver Center.

1/2010 to 12/2012 **HOUSTON COMMUNITY COLLEGE SYSTEM**, Houston, TX
Adjunct Professor of Government

- Instruction of *American Government: National, State, and Local I* (GOVT 2301) at HCCS Southwest College (Stafford Campus) and HCCS Southeast College.
- Instruction of Dual Credit *American Government: National, State, and Local I* (GOVT 2301) at Stafford High School in Stafford, TX..

8/2011 to 5/2012 **SAN JACINTO COLLEGE**, Houston, TX
Adjunct Professor of Political Science

- Instruction of *American and Texas Government I and II* (GOVT 2301 and GOVT 2302).

1/2010 to 5/2010 **UNIVERSITY OF ST. THOMAS**, Houston, TX
Adjunct Professor of Political Science

- Instruction of *American and Texas Government II* (POLS 2332).

RELATED PROFESSIONAL WORK EXPERIENCE:

11/2006 to 12/2009 **LAW OFFICES OF GEORGE JACOBS, ATTORNEY AT LAW,** Houston, TX
Legal Assistant

- Providing financial, administrative, and legal assistance to a private law practice with two law offices in the Greater Houston-area.
- Legal document processing; including motions, depositions, briefs, and affidavits.

9/2005 to 11/2006 **MERRILL LYNCH**, Houston, TX
Financial Advisor

- Researched and analyzed various economic and stock market environments and movements.
- Formed new client relationships and assisted clients with investment and retirement needs and goals.
- Assisted Senior Financial Advisors in researching, marketing, and transactional needs.

1/2005 to 5/2005 **MAYOR BILL WHITE'S OFFICE OF GOVERNMENT AFFAIRS**, Houston, TX
Legislative Intern

- Researched legislative production from the Texas Legislature and the United States Congress that affected or could have potentially affected the City of Houston.
- Assisted in presenting reports pertaining to on-going legislation to potentially affected city departments.
- Researched and applied for grant opportunities benefiting the City of Houston.

1/2004 to 5/2004 **UNIVERSITY OF ST. THOMAS**, Houston, TX
Research Assistant, Department of Political Science

- Performed data gathering and data entry for a publicized forecast of the 2004 presidential elections, which consisted of a linear regression with a margin of

error of three percentage points and successfully forecasted the popular vote in the 2004 presidential election.

6/2003 to 5/2004 **HONORABLE CONGRESSMAN CHRIS BELL**, Washington, DC and Houston, TX

Congressional Intern

- Researched various topics including the Iraq war, security concerns, and immigration for hearings of the House Committee on International Relations (now known as the House Committee on Foreign Affairs).
- Corresponded with the Department of Homeland Security in order to obtain radiological detection devices for the Port of Houston and the City of Pasadena.
- Coauthored a speech for Congressman Bell, which he read at a Committee on International Relations hearing regarding immigration reform.
- Provided services for district constituents, which included the facilitation of guided tours of the United States Capitol.
- Assisted in Congressman Bell's 2004 congressional primary campaign via district canvassing, phone banking, and volunteer organizing.

PROFESSIONAL DEVELOPMENT AND DESIGNATIONS:

- Keynote speaker, Lone Star College *Graduate Study Conference* (2018).
- National Institute for Staff and Organizational Development (NISOD)—*Master Presenter* (2016).
- Lone Star College System, *Leadership Academy*—Academy Fellow (2016).
- Completed the Lone Star College System *Higher Education Teaching Institute (HETI)* professional development program (2012).
- Completed the Lone Star College System *Adjunct Certification Program (ACP)* professional development program (2011).

- *General Securities Representative*, North American Securities Administrators Association (Series 7 and Series 66 exams; licensed 2006 to 2008).
- *Microsoft Certified Professional*—Windows NT 4 (1999).
- Completed 2-year *Metal Trades* (welding and machining) vocational certificate program, Dulles High School, Fort Bend ISD, Texas (1996).